



AMERICAN INSTITUTES FOR RESEARCH

Study of the Incidence Adjustment in the Special Education Funding Model

Interim Report

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EXECUTIVE SUMMARY

This Interim Report presents preliminary data analyses and findings for the *Study of the Incidence Adjustment in the Special Education Funding Model*, which the American Institutes for Research (AIR) is conducting for the California Department of Education. The primary focus of this study is to re-evaluate the incidence of severe disabilities across the state, review the incidence multiplier and funding approach, and recommend whether and how the special disabilities adjustments should be continued.

In order to address these objectives, the research team has replicated the primary analyses from the previous study conducted on these issues (Parrish et al., 1998). To date, we have conducted a preliminary statewide analysis of the distribution of low incidence disabilities and high cost students. In identifying high cost students, we calculated a cost for every special education student based on services received, as reported by the 2001 California Special Education Management Information System (CASEMIS) database. These costs will be further refined through discussions with stakeholders and additional data analyses.

We have begun to examine the effects of the existing special disabilities adjustments (SDA) on Special Education Local Planning Area (SELPA) funding levels by looking at change over time in funding. These data show that the SDA comprises a small percentage of the subtotal special education appropriation. The increase in SDA over time appears substantial during the initial years of its implementation, but that is due to SELPAs reaching the full amount of their entitlement after being underfunded for two years.

Preliminary analyses were also conducted on the changes in special education services that occurred under the current funding approach. For instance, from 1996 to 2001, 215 percent more students have been placed in nonpublic residential schools within the state. This change however may be attributed to reporting differences and are not necessarily associated with the funding approach itself. Further analysis will need to be conducted to see how service patterns have changed at the SELPA level, particularly between those that received and those that did not receive the severity adjustment. Such analysis will require examining CASEMIS data from 1996 and all subsequent years, and the research team is waiting for these data.

Replicating the 1998 approach, we have determined that the distribution of severity across SELPAs is *not* random. Our preliminary analyses show that however we define severity—either on the basis of low incidence categories of disability or measures of above average cost *independent* of category—the observed variability across California’s 115 SELPAs is much greater than would be expected by chance alone.

Furthermore, using the approach from the prior study, we have developed provisional severity service adjustments for SELPAs serving disproportionate numbers of high cost students. Based on the standardized cost approach, the average cost for per special education student is \$6,912. This average cost plus its standard deviation of \$6,008 was then used as the cutoff for high cost students. All students with cost profiles at or above \$12,920 ($\$6,912 + \$6,008$) were included in

the severity service model to determine incidence multipliers. However, these findings are preliminary at this time and are expected to change with further analysis. When this model is finalized, we will provide updated findings and recommendations regarding the details of implementation in the final report.

These initial analyses produce a statewide estimate of special education services for school-aged children of \$4.5 billion. The estimated cost to the state for implementing the revised, preliminary incidence multipliers is \$128.7 million in the first year. The figures presented in this report are tentative and likely to change, pending the resolution of various cost issues, discussions with stakeholders, and further data analysis.

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CHAPTER 1: INTRODUCTION

Historical Context

The Poochigian and Davis Special Education Reform Act of 1997 (Assembly Bill 602, Chapter 854, Statutes of 1997) changed California special education funding from a resource-based to a census-based model. The new model distributes funds to Special Education Local Plan Areas (SELPA) based on a fixed amount according to the number of students in average daily attendance (ADA). The prior system established by the California Master Plan for Special Education provided funding based on units of placement. The long-term intention of the change was to provide comparable special education funding to SELPA with comparable enrollment.

The California Council for Exceptional Children (CEC) newsletter described the passage of AB 602 as “perhaps the most revolutionary legislative action in the history of California special education.”¹ However, this landmark legislation clearly specified that further study was needed in two areas: variability in the incidence of students with disabilities across the state who are significantly above average in cost and “severity,” and issues related to funding the state’s nonpublic schools. Both sets of questions were addressed through contracts awarded by the California Department of Education (CDE) to the American Institutes for Research (AIR), the results of which are presented in the reports *Special Education: Study of Incidence of Disabilities Final Report* (1998), and *Special Education: Nonpublic School and Nonpublic Agency Study* (1998). This is the Interim Report for the *Study of the Incidence Adjustment in the Special Education Funding Model*, a study to update findings from the initial incidence study.

Previous Incidence Study

In the previous study of the incidence of disabilities across California (Parrish et. al, 1998), AIR evaluated whether funding for SELPA under the new census approach should be adjusted to account for differing incidences of disabilities among SELPA. AIR found that severe and/or high cost students were not randomly distributed throughout the state. These findings were consistent and clear, regardless of the definition of severity used. Accordingly, AIR created a “severity service multiplier” for each SELPA in the state based on the services received by the special education students residing in their attendance areas. This allowed AIR to identify SELPA with responsibilities for disproportionate numbers of severe and/or high cost students in comparison to the statewide average. A supplemental funding allowance was proposed for SELPA based on their severity service multiplier in relation to their overall AB 602 average daily attendance funded rate and other factors.

These multipliers were incorporated into the AB 602 funding model by SB 1564 (Chapter 330, Statutes of 1998). This legislation required that the funding model be adjusted for severity

¹ Kennedy, S. (1997, Fall). CSF/CEC support helps pass revolutionary reform measure. *CSF/CEC Journal*, Fall 1997, 4-5, 20.

through 2002-03, at which time a new study must be completed to review the incidence multiplier and the necessity of continuing to adjust for severity in the funding model. Of the 115 SELPAs across the state, 44 qualified for an incidence multiplier, 34 of which actually received funding.

A Request for Proposals (RFP) for this new study was released on October 2002, to which AIR responded and was awarded a contract. Work for the project began on February 6, 2003.

Research Questions

The following is the set of research questions, as specified in the RFP, to be answered in this study:

1. What “true” differences, if any, exist among SELPAs in the incidence and mix of disabilities (severity and type)? In this context, “true” differences means differences that are the result of underlying population differences, not reporting differences or differing program designs or cost structures.
2. What effect do the population differences have on the expected mix of services that must be provided and the expected costs of providing those services?
3. Are differences in the populations and the resulting differences in services and costs significant enough from a public policy perspective to justify adjustments in a funding formula?
4. Are the data accurate and sufficiently reliable to be used in a funding formula?
5. Are there alternative proxy measures that are independent of reporting by schools that would provide an accurate indicator of the level of expected disability?
6. What alternative methodologies are available for adjusting the funding formula to account for the observed differences, consistent with the goals of AB 602 (for example: simplification, programmatic flexibility, and elimination of inappropriate fiscal incentives for identifying students as needing special education or for placing students in particular programs)? What is the most fair and feasible method among the alternatives considered?
7. What are the effects of the adjustment methodology and the particular incidence multiplier factors used on SELPA funding levels in the existing model?
8. What specific changes are warranted in the funding model to accommodate a funding adjustment to reflect differences in the level of disabilities? What are the relevant factors that should be incorporated? What is the estimated cost of implementing the recommended changes?

Overview of Approach

The scope of this study, which is to re-evaluate the incidence of disabilities across the state, review the incidence multiplier, and recommend whether and how to continue the funding approach, contains a number of steps. The following are the study's steps and corresponding research questions:

1. Examine the effect of the existing special disabilities adjustments on SELPA funding levels in the current funding model [Research Question 7],
2. Re-examine the incidence of disabilities at the SELPA level to determine whether there is significant variation across the state [Research Question 1],
3. Determine whether there are alternative proxy measures that are independent of reporting by schools that would provide an accurate indicator of the level of expected disability [Research Question 5],
4. Determine whether any observed differences in incidence have a significant effect on the relative costs to SELPAs for providing special education services, and whether any differences are significant enough to justify adjustments to the funding formula [Research Questions 2, 3, and 4],
5. Develop a method to adjust the funding formula that does not create inappropriate fiscal incentives for identifying students as needing special education or for placing students in particular programs [Research Questions 6 and 8],
6. Examine alternative methodologies available for adjusting the funding formula, and determine which approach is most fair and feasible [Research Question 6],
7. Update the incidence multiplier factors according to the approach chosen [Research Question 8], and
8. Provide recommendations regarding the necessity of continuing to adjust the funding formula [Research Question 8].

In order to address these objectives, the research team has first replicated and updated the primary analyses from the previous study. At the same time, we are exploring the feasibility of additional and/or alternative approaches these questions. Complete findings will be presented in the final report. To date, we have conducted a statewide analysis of the distribution of low incidence disabilities and high cost students. In identifying high cost students, we calculated a cost for every special education student based on services received, as reported by the 2001 CASEMIS. These costs will be further refined through discussion with a Stakeholder Group, formed for the purpose of this study, and subsequent analyses. Using these early estimates, we identified the number of high cost students in each SELPA and generated preliminary severity service adjustments for SELPAs serving a disproportionate number of high cost students.

Progress To Date

Examine Impact of Current Severity Adjustment

We have begun to examine the effects of the existing special disabilities adjustments on SELPA funding levels by looking at change over time in funding. This included tracking supplemental funds that SELPAs have received due to the severity service multipliers in the current model as well as subtotal special education funding over time. This entailed a longitudinal review of special education fiscal records on SELPA revenues, as obtained from the state. We also believe it is important to assess any changes in the intensity of service levels that may have occurred under the current funding approach. In the prior report, we suggested that the state may wish to audit SELPAs that appear to be disproportionately increasing services, using the year prior to the severity adjustments as a baseline. While we considered it unlikely that a SELPA would intensify services in order to increase its severity service multiplier, nevertheless we examined the intensity of services and resource patterns across SELPAs based on 1996 and 2001 CASEMIS data. The research team has requested CASEMIS for 1996, as well as data for each following year, to conduct more detailed analysis, and we are still awaiting the data. We have also started analyzing the rates of identification of disabilities over time to determine what, if any, changes occurred during the review period.

Determining Incidence of Disability, by Severity and Type

An important objective of this study is to re-examine the “true” incidence and mix of disabilities, by severity and type, at the SELPA level to determine whether there is significant variation across the state. As stated in our proposal, the only “pure” approach to determining the “true” incidence and mix of disabilities would be to randomly select large numbers of students, with and without identified disabilities, from SELPAs throughout the state. We would then conduct independent individual assessments to determine whether they have a disability, the severity level, and whether they qualify for special education services. From these assessments, we could derive “true” incidence rates not influenced by differences in local identification practices, differing program designs, or the relative availability of resources across SELPAs. However, this would be cost-prohibitive and time-consuming.

Given the time and resources available, we are relying upon alternative approaches to estimate measures of incidence. The first step in this analysis is to derive one or more operational definitions of severe and/or high cost students, and then to test for varying levels of incidence of severity. Because there is some subjectivity in operationalizing these definitions, we will continue to review proposed alternative definitions with the Stakeholder Group.

As a first test of varying incidence, we examined variation across SELPAs in low incidence disability categories, which are generally assumed to be less subjectively determined and largely medically defined. Secondly, we examined variations in the incidence of “high cost” students by examining the intensity of services received and generated cost estimates of these services. Both of these analyses are based on data from the 2001 CASEMIS.

Generally, the second approach described above is preferred over the first. Patterns of services received are an indication of the needs of the population and are considered perhaps the best available proxy for severity. That is, it can be inferred that, on average, more severe needs are related to more intensive services. It is also believed that services received are a better indication of severity level than disability category, because they reflect as best as possible what the parents, teachers, administrators, and health care providers working with the individual students decide is most appropriate and necessary through the Individual Education Program process. By associating standardized dollar amounts with these services (irrespective of local cost structures), we can estimate the rate of incidence for high cost students across SELPAs. We have also ascertained that the variations in these incidence rates across SELPAs are greater than would be expected by chance. See Chapter 3 for the results of our analyses.

One inherent drawback of both of these approaches is that they rely upon data about a population of students that SELPAs have already identified as having disabilities. Therefore, reporting differences due to varying identification practices among SELPAs cannot be entirely avoided. Examining CASEMIS data alone, it is difficult to disentangle exogenous factors (i.e., measures that are outside the identifying agency's locus of control) from those that are endogenous (i.e., those within local control). Accordingly, we will also be identifying exogenous measures that might be expected to correlate with the "true" incidence of disability. It is important to attempt to distinguish between variations in identification and service patterns for special education students due to endogenous (local practice) factors versus exogenous ("true" variations in the populations enrolled).

Alternative Proxy Measures

In addition to further investigation and recalculation based on the methods used in the last study, we are supplementing these efforts by researching other proxy measures. We are exploring other databases such as the Census Mapping Database to search for alternative indicators of incidence by type and severity. Through the National Center for Education Statistics (NCES), data available through the U.S. Census are converted to be applicable to school district boundaries. We will examine alternative variables that might independently or in combination play a role in revealing variability in the "true" incidence of severe and/or high cost disabilities across SELPAs.

Pending further examination of other potential variables, we offer as examples three social variables, poverty, percent minority students, and language proficiency, and three organizational variables, SELPA size, SELPA resource capacity, and urbanicity. For poverty, we suggest indicators such as the percentage of non-private school students in attendance within a SELPA who received free or reduced lunch and the percentage of non-private school students who received Aid to Families with Dependent Children. We will look at variation arising from the percentage of current enrollment of minority students (African-American, Hispanic, Pacific Islander, and Native American) and the percentage classified as having limited English proficiency. SELPA size will be represented by such measures as current enrollment and average daily attendance. SELPA resource capacity will be represented by the ratio of total instructional expenditures to current enrollment and by the ratio of students to teachers. Finally, urbanicity measures will be derived using data from the NCES. Ultimately, we will work with the

Stakeholder Group to assist us in considering the full range of variables that we may wish to include in this analysis.

Analysis of Costs to SELPAs Based on Services Received

The fourth step in this study is to determine whether any observed differences in incidence have a significant effect on the mix of services received and the relative costs to SELPAs for providing special education services. In this analysis, we have developed a uniform set of procedures for measuring variations in services received by students across the state, and how variation in services translates into relative costs to SELPAs. The research team has updated the model previously used in the last study to compare the number of students receiving services to the special education personnel providing these services. This analysis is based primarily on data from CASEMIS and special education personnel data obtained from the CDE. Contingent upon the results of these analyses, we will continue to explore whether the differences in the population and the resulting differences in services and costs between SELPAs are statistically significant and of sufficient economic magnitude to justify adjustments in the funding formula.

Severity/High Cost Service Adjustment

One of the final steps will be to develop a method to adjust the funding formula to appropriately reflect observed variations in severity, but which does not create inappropriate fiscal incentives for identifying students as needing special education or for placing students in particular programs. In this Interim Report, we have replicated our prior analyses to develop a severity service adjustment for SELPAs serving disproportionate numbers of severe and/or high cost students. The initial simulation model was developed to compare the net costs of each SELPA's high cost students in relation to the state average.

As supplemental funding is based upon services received rather than category of disability, this approach was not expected to create fiscal incentives for identifying students; however, this premise will be explored more fully for the final report. In addition, we will explore alternative methods for adjusting the funding formula, revisiting the alternatives examined in the previous study, as well as new possibilities that may be revealed through the examination of exogenous data, as described above, and through discussions with our Stakeholder Group. Input from this group will be critical in developing alternatives and in determining which approach is most fair and feasible. We will provide final severity service multiplier factors accordingly, if necessary, and provide recommendations regarding the details of implementation. Preliminary results of the replication of the approach used in the earlier 1998 report appear Chapter 5.

State-Level Advisory Group

As specified in the RFP, the research team must meet with a State-level Advisory Group to provide updates on the project on a regular basis. This group consists of staff from the three interested agencies in this project, and was assembled by Carol Bingham. The members of this group are: Carol Bingham (the Project Monitor) and Kimberly McDaniel of the CDE, Paul Warren of the Legislative Analyst Office, and Heather Carlson and Dan Troy of the Department of Finance. Dr. Tom Parrish, the Principal Investigator for this study, met with this group for the first time on February 24, 2003, and again on April 7, 2003.

Stakeholder Group

To provide expert input on all aspects of the project, AIR has assembled a Stakeholder Group that includes representatives from various educational agencies at the state and local levels. This group is assisting the study team in identification of relevant issues and in gathering necessary information, and includes the following people and respective agencies:

- Mark Allen, Director of Fresno SELPA
- Larry Belkin, Chief of Special Education Services, Orange County Department of Education
- Carol Bingham, Manager of Budget Management and Fiscal Systems Analysis Office, California Department of Education Fiscal and Administrative Services Division
- J. Sarge Kennedy, Assistant Superintendent, Student Programs and SELPA Operations, Tehama County Department of Education
- Jack Lucas, SELPA Director, East San Gabriel Valley SELPA
- Kimberly McDaniel, Education Programs Consultant, California Department of Education Special Education Division
- Kay McElrath, Budget Supervisor, San Diego Unified School District
- Mark Shrager, Director of Budget Services, Los Angeles Unified School District
- Julie Williams, Staff Services Analyst, California Department of Education Special Education Fiscal Services

The Stakeholder Group met for the first time on March 11, 2003, in Sacramento. See Appendix A for a summary of the meeting. A second meeting was held April 7, to review the draft interim report and address further issues.

CHAPTER 2: CHANGE OVER TIME

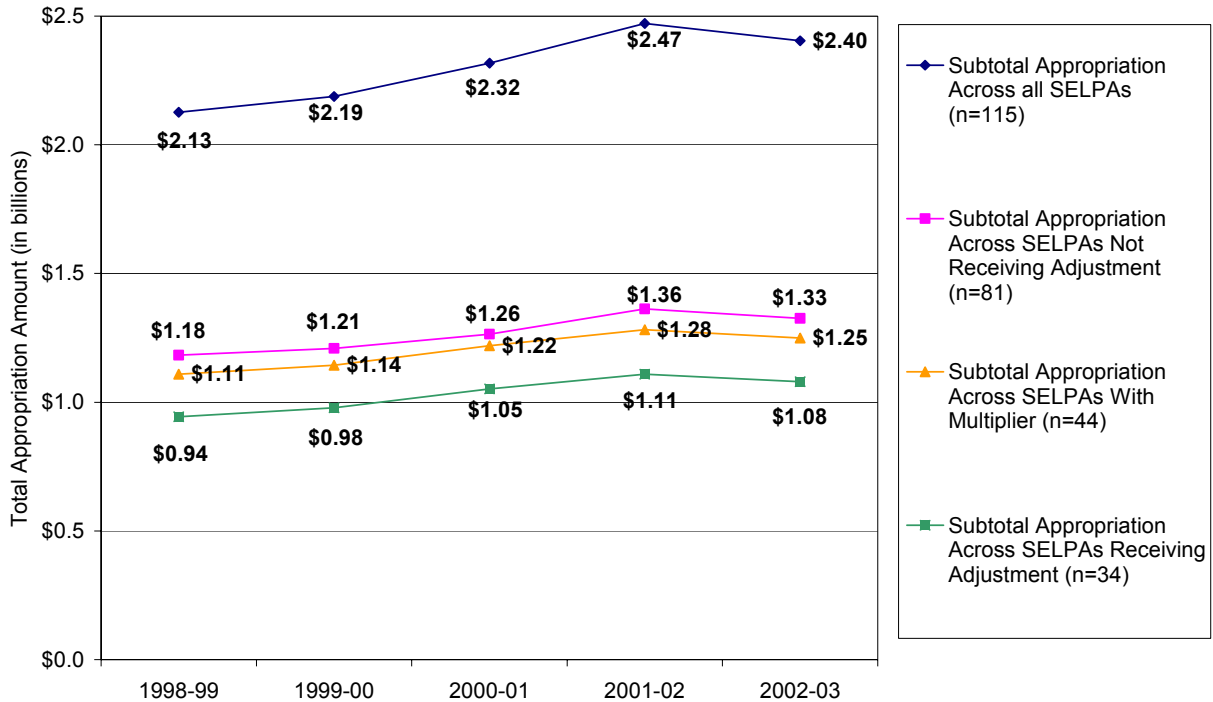
Analysis of the Special Disabilities Adjustment

The research team was charged with answering the research question, “What are the effects of the adjustment methodology and the particular incidence multiplier factors used on SELPA funding levels in the existing model?” To do so, we analyzed the SELPA Special Disabilities Adjustment Funding Data, for years 1998-99 through 2002-03, obtained from the California Department of Education. This file provides the appropriation amounts for all SELPAs across the state,² entitlement amounts for the Special Disabilities Adjustment (SDA), and actual SDA amounts appropriated for the 34 SELPAs receiving an adjustment. For the purposes of this study, only a portion of the total appropriation is included in the analysis: the Chapter 854, Statutes of 1997 (AB 602) Base, Cost of Living Adjustment (COLA), Equalization, Growth, and SDA funds. Forty-four SELPAs have incidence multipliers above 0.0 based on the approach developed in the previous study, although 10 eligible SELPAs did not receive an adjustment due to having high AB 602 base rates that cancelled out their low multipliers (see Appendix B). All figures in the following graphs have been adjusted to 2002-03 dollars according to the Cost of Living Adjustment (COLA).

² For the purposes of this study, this fiscal analysis does not include data for the LA Court Schools SELPA.

Exhibit 2-1 shows the subtotal appropriation amount across SELPAs, adjusted to 2002-03 dollars. The subtotal appropriation is shown across all SELPAs in the state (n=115), SELPAs not receiving an adjustment (n=81), SELPAs receiving a multiplier value above 0.0 in the 1998 study (n=44), and SELPAs receiving an adjustment (n=34). The subtotal appropriation increased slightly each year from 1998-99 to 2001-02 (between 3 and 8 percent), and then decreased slightly by about three percent across all groups.

Exhibit 2-1. Subtotal Appropriation, Adjusted to 2002-03 Dollars, 1998-99 to 2002-03* (in Billions of Dollars)



* Subtotal Appropriation Includes AB 602 Base, COLA, Equalization, Growth, and SDA Funding only.

Exhibit 2-2 shows the special disabilities adjustment (SDA) entitlement and appropriation amounts across the 34 SELPAs that received an adjustment. The SDA appropriation increased by over 100 percent between 1998-99 and 1999-2000 (\$17.5 to \$35.4 million), and by 114 percent the subsequent year (\$35.4 to \$75.6 million). Following these jumps, the SDA increased only slightly by about three percent in the two following years. It is important to put these escalations in the context of what SELPAs were entitled to. While the increases in the appropriation appear dramatic in the first two years, the SELPAs were not fully funded at the start of the adjustment until 2000-01, and these increases represent attempts to bring the SELPAs up to the entitlement level. The SDA entitlement, in contrast, decreased slightly from 1998-99 to 2000-01, and then rose only slightly in the following years.

Exhibit 2-2. Special Disabilities Adjustment Appropriation and Entitlement Amounts, Adjusted to 2002-03 Dollars, 1998-99 to 2002-03 (in Millions of Dollars)

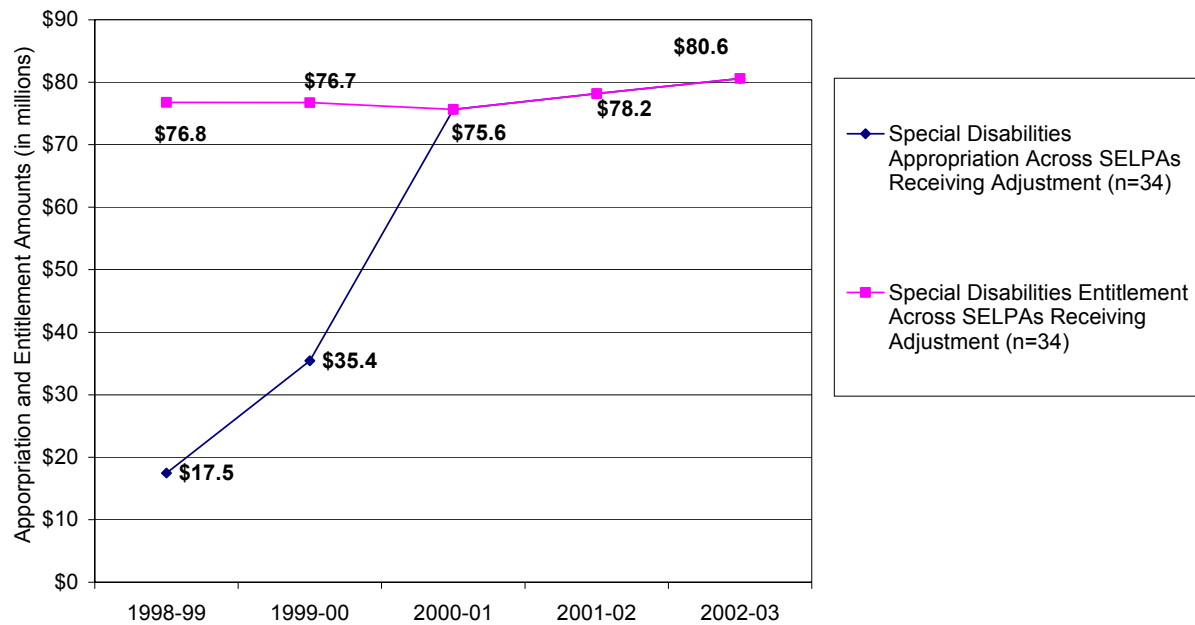
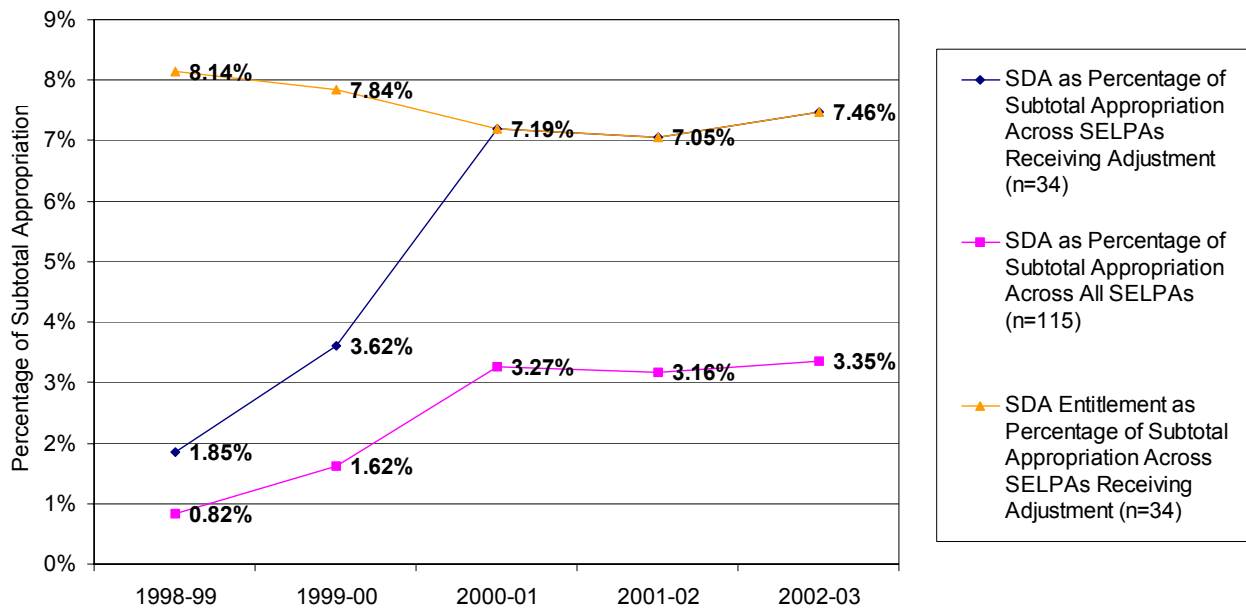


Exhibit 2-3 shows the special disabilities adjustment (SDA) entitlement and appropriation as a percentage of the subtotal appropriation. The SDA entitlement decreased slightly for the first four years, and then increased slightly after 2001-02. Across all years of analysis, the entitlement hovered between 7 and 8 percent of the subtotal appropriation. The SDA appropriation is shown in two respects: as a percentage of the subtotal appropriation across the SELPAs receiving the adjustment and as a percentage of the subtotal appropriation across all SELPAs in the state. As shown, the percentage of SDA appropriation increased rapidly from 1998-99 to 2000-01, when it reached the entitlement level, and then decreased and increased slightly in the following two years. During the final year, the SDA appropriation comprised about 7.5 percent of the subtotal appropriation in the 34 SELPAs receiving the adjustment funds. When comparing the SDA appropriation to the subtotal appropriation across all SELPAs in the state, it amounted to less than 3.5 percent in 2002-03. As such, it appears that the SDA does not have a large impact on special education funding.

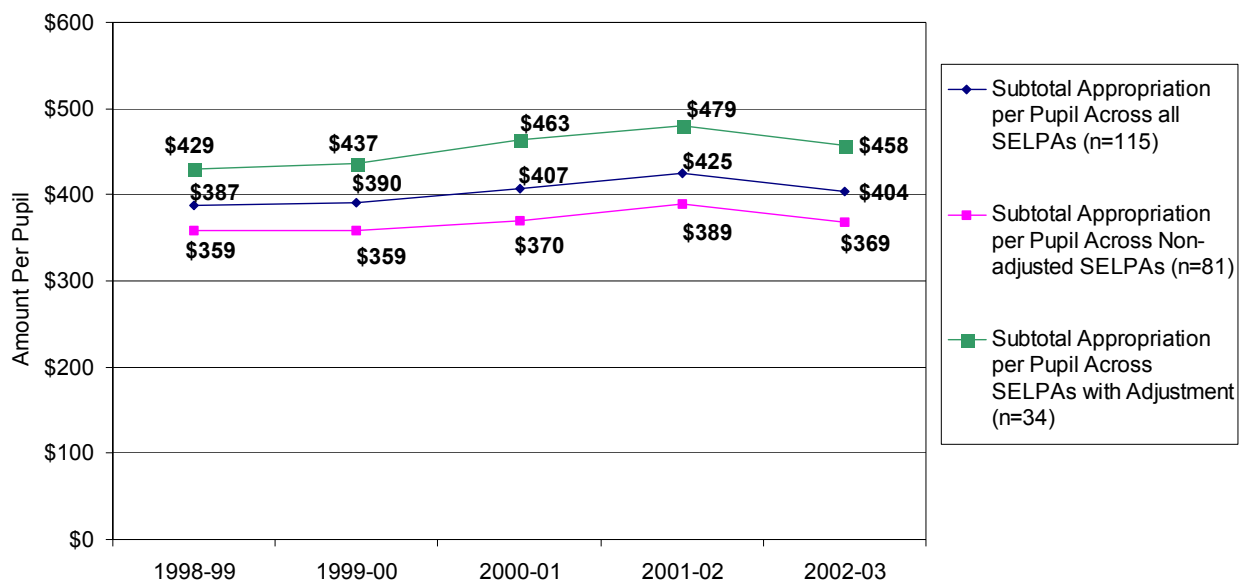
Exhibit 2-3. Special Disabilities Adjustment Appropriation and Entitlement as Percentage of Subtotal Appropriation, 1998-99 to 2002-03



* Subtotal Appropriation Includes AB 602 Base, COLA, Equalization, Growth, and SDA Funding

Exhibit 2-4 shows the subtotal appropriation per average daily attendance (ADA) for 1998-99 to 2002-03. Among the SELPAs receiving the adjustment, the per pupil amount increased each year up to 2001-02, and then decreased. The same trend holds across all SELPAs in the state. Among the SELPAs not receiving the adjustment, the subtotal appropriation per pupil was constant (at approximately \$359) for the first two years, peaking at \$389 in 2001-02. The per pupil subtotal appropriation amount among SELPAs receiving an adjustment is about 20 to 25 percent higher than among those not receiving it.

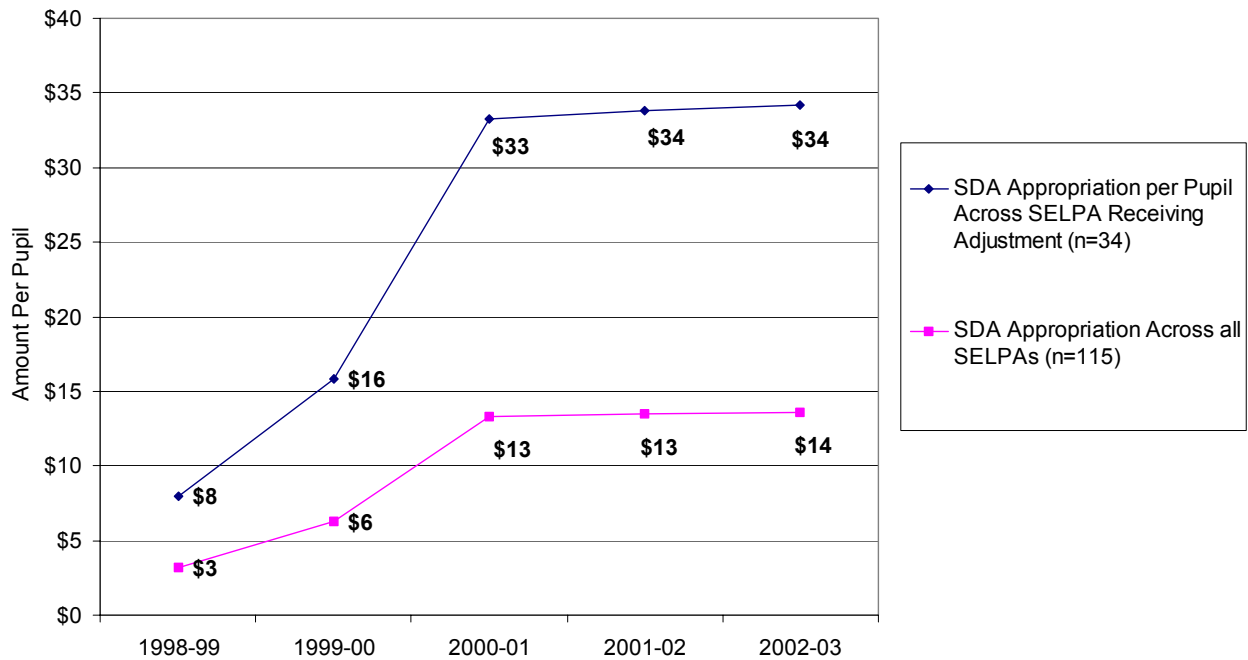
Exhibit 2-4. Subtotal Appropriation per Pupil Based on Average Daily Attendance, Adjusted to 2002-03 Dollars, 1998-99 to 2002-03



* Subtotal Appropriation Includes AB 602 Base, COLA, Equalization, Growth, and SDA Funding only.

Exhibit 2-5 shows the special disabilities adjustment appropriation per ADA, inflated to 2002-03 dollars. These amounts increased about 100 percent from 1998-99 to 1999-2000, and by about 110 percent the following year. Following these large climbs, the SDA leveled-out and increased by less than one percent each year. The SDA per ADA is less than 8 percent of the subtotal appropriation per pupil amount in SELPAs receiving the adjustment.

**Exhibit 2-5. Special Disabilities Adjustment Appropriation Per Pupil,
Adjusted to 2002-03 Dollars, 1998-99 to 2002-03**

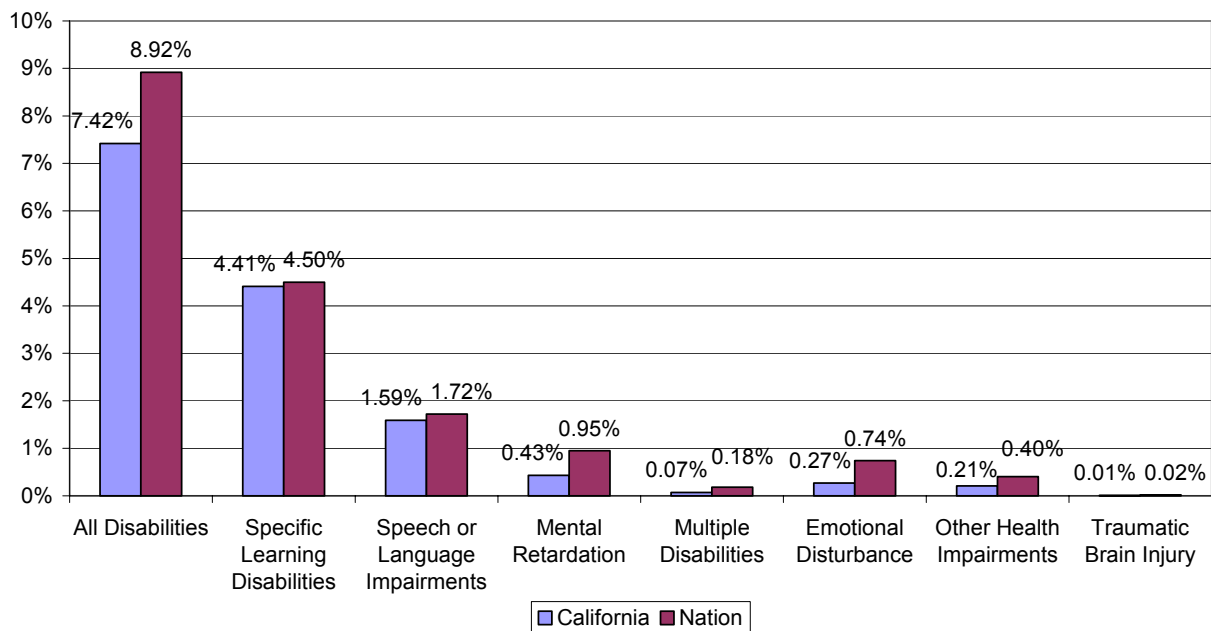


These exhibits show that the SDA comprises a small percentage of the subtotal appropriation for special education. The increase in SDA over time appears substantial, but that is due to SELPAs receiving the full amount of their entitlement after being underfunded for two years. The data suggest that special disabilities adjustment has not had a significant impact on SELPA funding across the state since its inception.

Analysis of Special Education Enrollment Over Time

Using federal data,³ Exhibit 2-6 provides a snapshot comparison between California and the nation of the percentage of the resident population with disabilities in 1999-2000. The categories presented in this exhibit are those that have not been classified by the CDE as low incidence.⁴ In each disability category, California has a slightly lower percentage of the population with disabilities than the nation as a whole. The largest difference is mental retardation, which is 0.43 percent of the population in California and 0.95 percent in the nation. For all disabilities combined, there is a difference of just 1.5 percent between California and the nation. Given that California makes up a large part of the national special education population, it is not surprising that the proportion of disabilities seen in both populations is similar.

Exhibit 2-6. Percentage of the Resident Population Ages 6-21 with Disabilities Not Categorized as "Low Incidence," California and the Nation, 1999-2000*



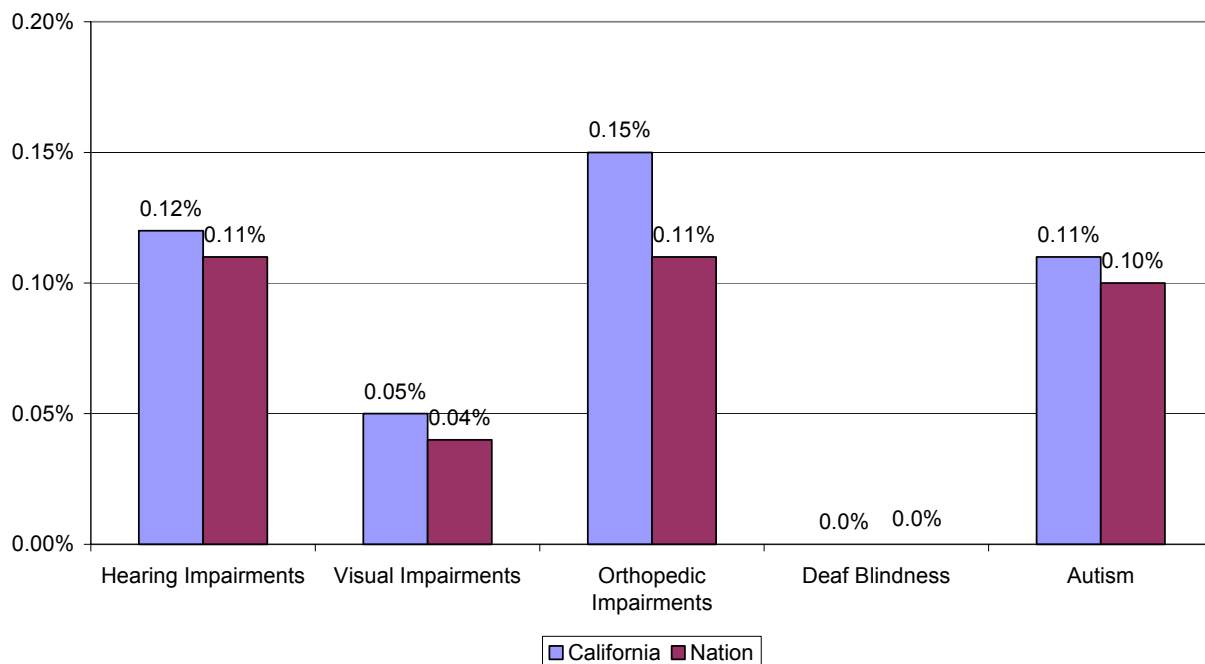
* California Education Code (56026.5.) defines low incidence disabilities severe disabling conditions are hearing impairments, vision impairments, and severe orthopedic impairments, or any combination thereof.

³ The 20th-23rd Annual Reports to Congress on the Implementation of the Individuals with Disabilities Act.

⁴ California Education Code (56026.5.) defines low incidence disabilities severe disabling conditions are hearing impairments, vision impairments, and severe orthopedic impairments, or any combination thereof.

Exhibit 2-7 looks at the percentage of students with disabilities classified as low incidence (California Education Code 56026.5) and students with autism in California and the nation in 1999-2000. In contrast to the prior exhibit, California has a slightly higher percentage of population with low incidence disabilities for all of these categories, except deaf-blindness. Overall, the difference between California and the national level is small. Again, this can be attributed to the fact that California makes up a large percentage of the special education population in the nation.

Exhibit 2-7. Percentage of the Resident Population Ages 6-21 with "Low Incidence" Disabilities and Autism, California and the Nation, 1999-2000*



* California Education Code (56026.5.) defines low incidence disabilities to include the following severe disabling conditions: hearing impairments, vision impairments, and severe orthopedic impairments, or any combination thereof.

Exhibit 2-8 shows the change in disabilities as a percentage of the total special education population in California and the nation. It is noteworthy that the changes in California are often different than what is seen at the national level. From 1996 to 2000, the percentage of the special education population represented by mental retardation increased by .23 percent in California, in comparison to a *decline* of .53 percent in the nation. Another dissimilarity is the increase of emotion disturbance (.11 percent) as a proportion of the special education population in California, while its proportion decreased on a national scale by .27 percent. By contrast, other health impairment increased as a percentage of the population in the nation by nearly four times the change in California (1.4 percent versus .38 percent). Overall, it appears that the special education enrollment trends in California are not of the same magnitude (or even the same direction) as changes at the national level.

Exhibit 2-8. Change in Disabilities as a Percentage of the Total Special Education Population, California and the Nation, 1996 to 2000

Disability category	Change from 1996 to 2000, California	Change from 1996 to 2000, Nation
Mental Retardation	0.23%	-0.53%
Hearing Impairments	-0.04%	-0.05%
Speech or Language Impairment	-0.16%	-0.90%
Visual Impairment	-0.05%	-0.03%
Emotional Disturbance	0.11%	-0.27%
Orthopedic Impairment	-0.07%	-0.01%
Other Health Impairment	0.38%	1.40%
Specific Learning Disability	-1.12%	-0.60%
Deaf-Blindness	0.00%	0.01%
Multiple Disabilities	-0.04%	0.09%
Autism	0.70%	0.50%
Traumatic Brain Injury	0.05%	0.05%

Sources: *The 20th-23rd Annual Reports to Congress on the Implementation of the Individuals with Disabilities Education Act.*

Exhibit 2-9 shows the change over time in the special education population, comparing 1996-97 and 2001-02 CASEMIS data used in the prior and current studies. The special education population analyzed excluded children 0-2 years old as well as certain SELPAs.⁵ Although the overall special education population increased by nine percent from the prior study, larger variations are seen by disability category. The number of children with autism increased by nearly 180 percent, while traumatic brain injury and other health impairment categories grew by 64 and 56 percent, respectively. However, the change in the proportions of the special education population represented by these disabilities were either comparable to or lower than the national change (Exhibit 2-8).

Exhibit 2-9. Number and Percentage Change of Special Education Students by Disability, Ages 3-22, 1996 to 2001*

Disability Category	1996	2001	% Change from 1996 to 2001
Mental Retardation	34,520	41,606	20.5%
Hard of Hearing	5,921	6,509	9.9%
Deafness	3,437	3,714	8.1%
Speech or Language Impairment	158,061	167,536	6.0%
Visual Impairment	4,038	4,303	6.6%
Serious Emotional Disturbance	18,852	23,812	26.3%
Orthopedic Impairment	12,919	14,596	13.0%
Other Health Impairment	14,820	23,236	56.8%
Established Medical Disability	n/a	152	n/a
Specific Learning Disability	334,665	345,866	3.3%
Deaf Blindness	183	186	1.6%
Multiple Disability	6,406	6,322	-1.3%
Autism	6,275	17,500	178.9%
Traumatic Brain Injury	882	1,443	63.6%
All Disabilities	600,979	656,781	9.3%

Sources: Parrish et al., 1998 and CASEMIS December 2001.

* LA County Court Schools, California State Special Schools, California Youth Authority, and California Department of Developmental Services were exempted from the analyses.

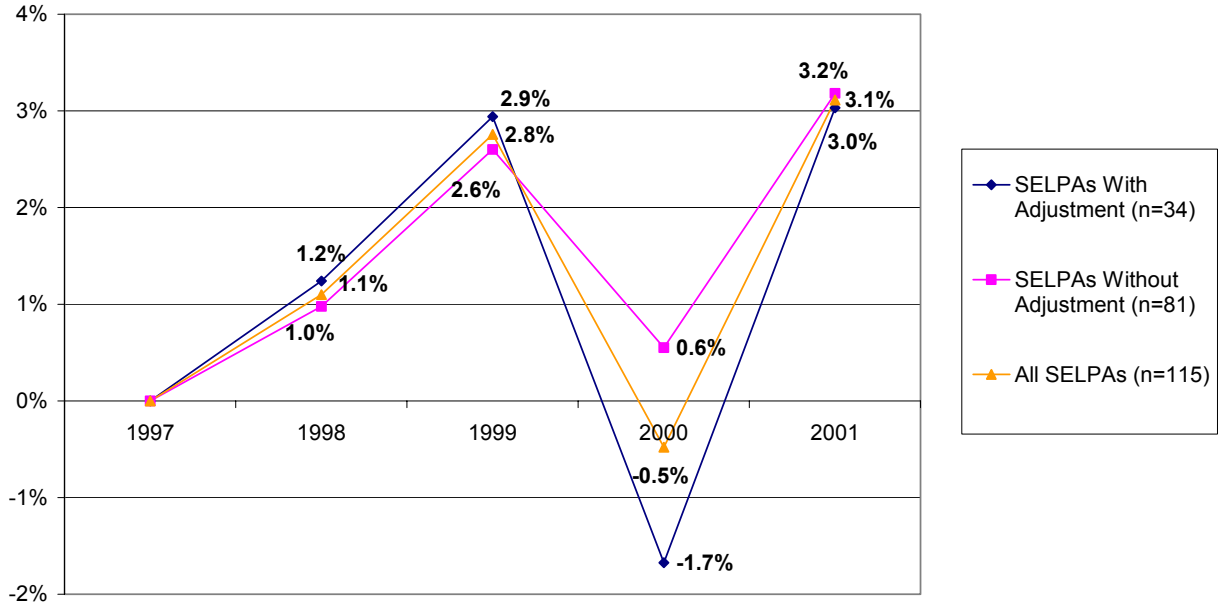
⁵ LA County Court Schools, California State Special Schools, California Youth Authority, and California Department of Developmental Services were exempted from the analyses.

Analysis of Low Incidence and High Cost Students Over Time

Exhibit 2-10 compares over time the number of students with low incidence disabilities in SELPAs that received adjustment funds (n=34) with those SELPAs that did not receive adjustment funds (n=81). This comparison suggests that the adjustment funds, which were first administered in 1998-99, might have had an impact on the counts of low incidence disabilities. The data in these exhibits are derived from the counts of low incidence disabilities reported to the state by SELPAs in order to qualify for Low Incidence Funding.⁶

The SELPAs that did not receive the adjustment funds have been consistently identifying more low incidence students every year since 1997. In 2000, the rate at which the counts of low incidence increased dropped from 2.6 percent to 0.6 percent, but the counts were growing nonetheless. In contrast, the counts of low incidence disabilities in SELPAs that received adjustment funding actually declined by 1.7 percent in 2000. The following year, the counts of low incidence disabilities in those SELPAs continued to grow at approximately the same rate as the other SELPAs that did not receive the adjustments (around three percent).

Exhibit 2-10. Percentage Change in Low Incidence Counts in SELPAs With and Without Severity Adjustment, 1997 to 2001

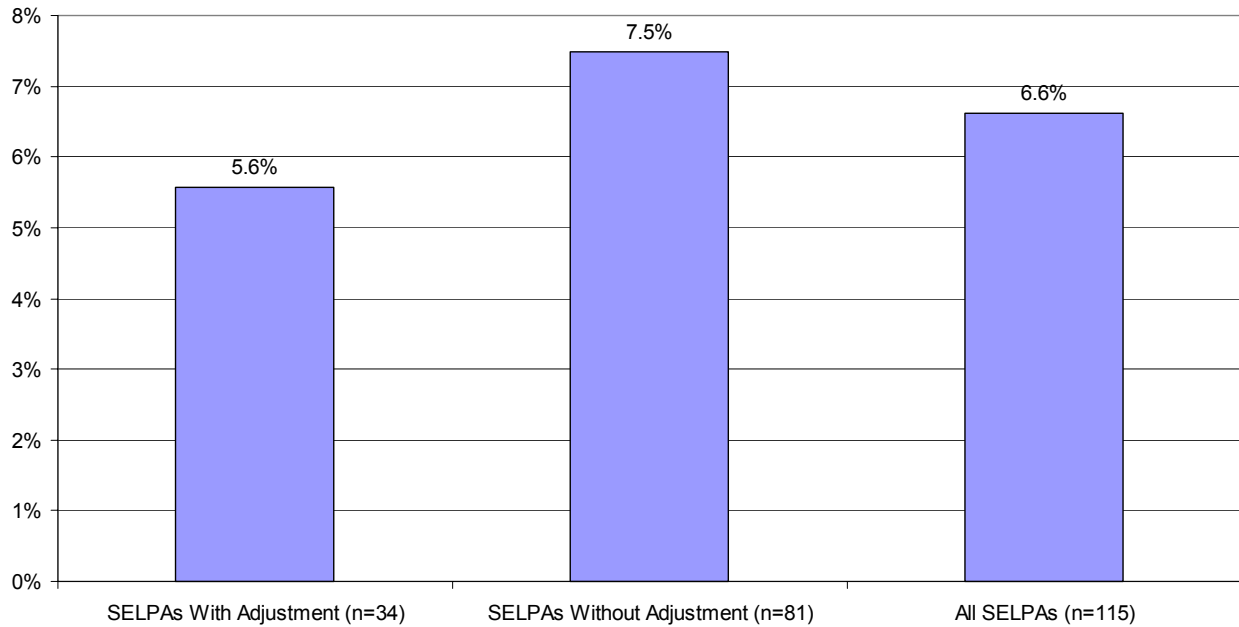


Sources: AB602 ADA and Low Incidence Data file obtained from the Special Education Fiscal Services, California Department of Education

⁶ California Education Code Section 56836.22 provides for funds to purchase specialized books, materials, and equipment as required under the individualized education program (IEP) for each pupil with low incidence disabilities as defined in Section 56026.5 ("hearing impairments, vision impairments, severe orthopedic impairments, or any combination thereof").

Exhibit 2-11 compares the overall change in low incidence disabilities from 1997 to 2001, also by adjustment grouping. It is interesting to note that the SELPAs that did not receive the adjustment had a larger increase (7.5 percent) than the SELPAs that did receive the adjustment (5.6 percent).

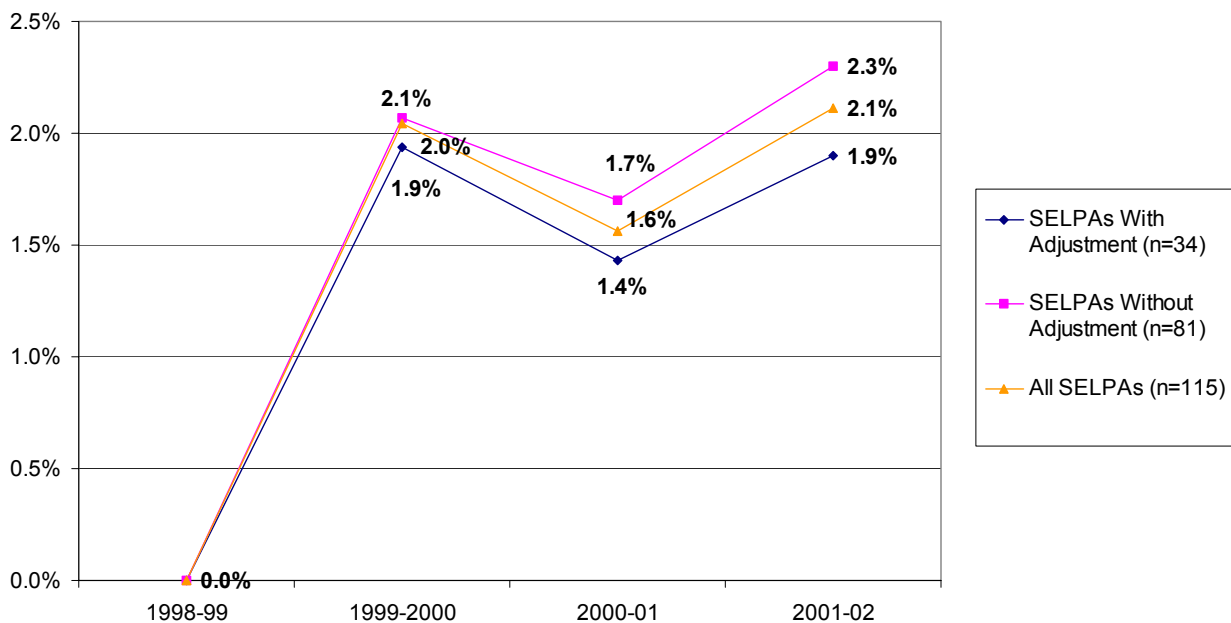
**Exhibit 2-11. Overall Percentage Change in Low Incidence Counts,
1997 to 2001**



Sources: AB602 ADA and Low Incidence Data file obtained from the Special Education Fiscal Services, California Department of Education

While SELPAs that do not receive the adjustment appear to have a greater increase in the counts of low incidence students, this must be put into the context of growth in average daily attendance (ADA). Exhibit 2-12 compares over time the change in ADA for SELPAs that received the adjustment and SELPAs that did not receive the adjustment. Although all SELPAs tend to follow the same general trend over the years, the ADA in SELPAs that did not receive adjustments increased at a faster rate than in SELPAs that received the adjustment (2.3 percent compared to 1.8 percent). This faster growth in ADA is a possible explanation for the higher growth in low incidence counts that was seen in Exhibit 2-11.

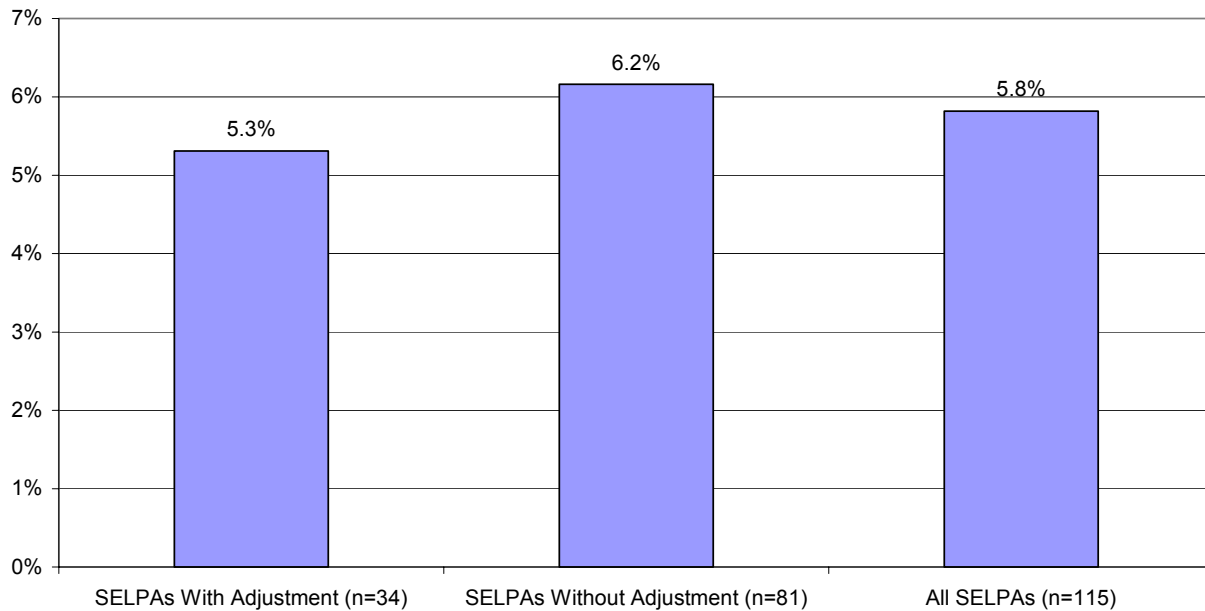
Exhibit 2-12. Percentage Change in Average Daily Attendance in SELPAs With and Without Severity Adjustment, 1998-99 to 2001-02



Sources: AB602 ADA and Low Incidence Data file obtained from the Special Education Fiscal Services, California Department of Education

Exhibit 2-13 compares the overall change in ADA in SELPAs with and without the adjustment since 1998-99. The ADA in SELPAs that did not receive the adjustment increased by 6.2 percent, a higher rate than the 5.3 percent increase in SELPAs that received the adjustment. This further reinforces the idea that the increase in low incidence counts in SELPAs that did not receive the adjustment could be attributed to higher ADA.

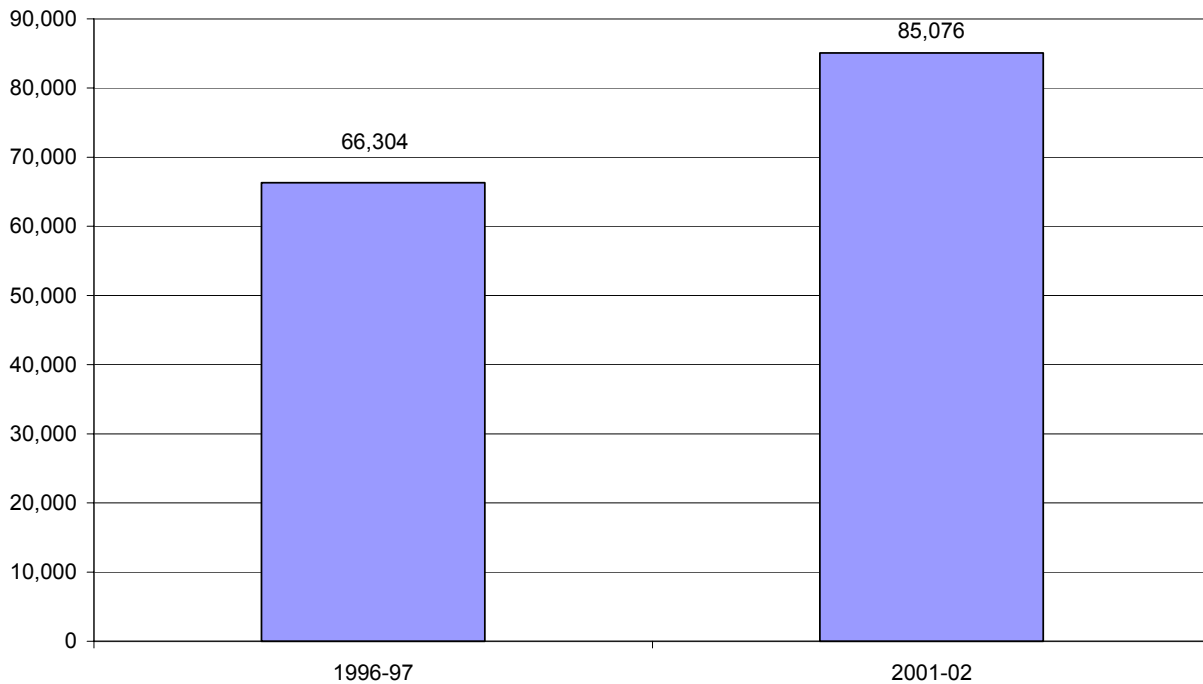
**Exhibit 2-13. Overall Percentage Change in Average Daily Attendance,
1998-99 to 2000-01**



Sources: AB602 ADA and Low Incidence Data file obtained from the Special Education Fiscal Services, California Department of Education

Comparing the counts of high cost students in the previous study to those in the updated analysis sheds further light on changes in the special education population as well as in service provision. Exhibit 2-14 shows change over time in the counts of high cost students as defined by the previous 1998 study and the updated analysis. The number of high cost students increased by 28 percent, from 66,304 in 1996 to 85,076 in 2001. However, this finding should be treated with caution, as the process and criteria for defining high cost students are somewhat different than the approach taken in 1998. Therefore, the differences shown here are not necessarily changes in the same population. Further analysis will be needed to determine whether and how SELPAs (by adjustment grouping) changed their service patterns.

Exhibit 2-14. Number of "High Cost" Students Statewide, 1996-97 and 2001-02*



* Students with cost profiles at or above \$11,904 (statewide average cost per pupil of \$6,417 plus the standard deviation of \$5,487) were defined as "high cost" in 1996-97. Students with cost profiles at or above \$12,920 (statewide average cost per pupil of \$6,912 plus the standard deviation of \$6,008) in 2001-02 were defined as "high cost" in this preliminary analysis. Therefore, as the criteria for defining high cost students changed, these numbers do not reflect the same population over time.
Sources: Parrish et al., 1998 and CASEMIS December 2001

Analysis of Special Education Services Over Time

In addition to changes in the population by disability and high cost students, it is of interest to examine how the population itself is being served. In short, what changes, if any, in service provision have occurred since the prior study? Exhibit 2-15 shows that 215 percent more students have been placed in nonpublic residential schools within the state. Such change is in stark comparison to the declines seen in nonpublic day schools, special day classes, and resource specialist programs. While private preschool enrollment declined by 15 percent, the number of special education children in state preschools grew by 40 percent over five years. However, comparisons are complicated by differences in the ways in which some of these settings were recorded in CASEMIS between the two years in question. While the 2001 CASEMIS categorizes Designated Instructional Services (DIS), Resource Specialist Program (RSP), and Special Day Class (SDC) as services, the 1996 format recorded these as "primary placements." This distinction may have resulted in reporting differences. Further analysis will need to be conducted to see how these settings changed at the SELPA level across all years.

Exhibit 2-15. School and Service Settings For Special Education Students in 1996 and 2001

Setting	1996	2001	% Change from 1996 to 2001
State Preschool	1,078	1,486	37.8%
Private Preschool	2,040	1,725	-15.4%
Designated Instruction and Services (DIS)	146,270	n/a*	n/a
Resource Specialist Program (RSP)	265,157	259,786	-2.0%
Special Day Classes (SDC)	178,288	163,175	-8.5%
Nonpublic Day School (NPS)	8,909	7,333	-17.7%
Nonpublic Residential School in California (NPS)	1,868	5,898	215.7%
Nonpublic Residential School Outside California (NPS)	n/a	151	n/a
Private Day School (Not certified)	1,088	705	-35.2%
Private Residential School (Not certified)	13	35	169.2%
Parochial School	876	809	-7.6%

*The 2001 CASEMIS database does not report on a student's primary placement; instead placements are treated as services. The number of children receiving DIS in 2001 cannot be compared reliably to the reported DIS placements in 1996.

Sources: Parrish et al., 1998 and CASEMIS December 2001

Exhibit 2-16 shows the number of and percentage change in students receiving special education services from 1996 to 2001. While the overall number of students receiving the services listed in these exhibits increased by nine percent from 1996 to 2001, the large increases as well as declines are seen by service type. The greatest growth was in the number of students receiving transition services, which increased over 500 percent, from 257 to 1,552 students. Behavior management services and services for deaf and hard of hearing also exhibited substantial increases of over 300 percent over the five-year period. The counts for these services, however, remain a small proportion of the overall population of special education students (of which there were over 600,000 for both years). Exhibit 2-17 shows the percentages of the total sample receiving each service type and the change over time. While students receiving occupational therapy increased by 264 percent, from 6,256 to 22,741 students (a slightly lower increase than the above services), this group now represents 3.5 percent of the total special education population, up from 1.0 percent in 1996.

Of interest also are services that show marked declines. Students receiving recreation services dropped by 77 percent from 1996 to 2001, and reader services decreased by nearly 69 percent. Again, these students represent a small proportion of the special education population. As shown in Exhibit 2-17, students in resource specialist programs, in special day classes in public integrated facilities, and receiving language and speech services showed the largest decreases as a percentage of the total special education population from 1996 to 2001.

These figures, however, may not necessarily reflect *real* changes in the number of students receiving services or true changes in service provision. Rather, the differences between the years may be the product of database structure variations and possible change in reporting practices. While the 1996 CASEMIS structure accounted for the services listed in the tables, they were recorded differently than in the 2001 CASEMIS database. For instance, resource specialist programs and special day classes were captured as primary placements in 1996, whereas they are now included as a service variable. The additional number of services allowed to be reported

(from four services in 1996 to eight services) could also have resulted in increases of counts. Students may have been receiving these services, but because of reporting limitations on the number of services, they may not have been accounted for in 1996. Furthermore, the severity adjustment based on services received may have created an incentive for SELPAs to report more accurately the number of services received by each special education student.

Exhibit 2-16. Special Education Students Receiving Special Education Services in 1996 and 2001

Service	Code	1996	2001	% Change from 1996 to 2001
Regular class with accommodation	20	n/a	7,479	n/a
Resource services (school-based)	25	n/a	19,229	n/a
Resource specialist program	26	265,157	259,786	-2.0%
Special day inclusion services	40	n/a	24,649	n/a
Special day class in public integrated facility	41	170,485	158,051	-7.3%
Special day class in public separate facility	42	7,803	5,124	-34.3%
Language and speech	50	249,225	249,694	0.2%
Home and hospital	51	2,688	2,414	-10.2%
Adapted physical education	52	46,974	40,239	-14.3%
Audiological services	53	5,976	4,321	-27.7%
Individual counseling	54	8,191	9,415	14.9%
Group counseling	55	4,067	4,391	8.0%
Guidance services	56	1,438	855	-40.5%
Occupational therapy	57	6,256	22,741	263.5%
Physical therapy	58	1,792	4,282	139.0%
Orientation and mobility	59	1,766	2,039	15.5%
Parent counseling	60	4,959	3,065	-38.2%
Social work services	62	636	598	-6.0%
Vocational education training	63	12,265	8,649	-29.5%
Recreation services	64	1,112	252	-77.3%
Individual/small group instruction	65	10,730	14,945	39.3%
Vision services	66	4,043	4,696	16.2%
Specialized driver training	67	186	134	-28.0%
Psychological services	68	5,967	8,079	35.4%
Specialized services for low incidence disabilities	71	2,298	1,879	-18.2%
Health and nursing - specialized	72	3,299	2,419	-26.7%
Health and nursing - other	73	4,198	2,916	-30.5%
Interpreter services	74	714	751	5.2%
Education technology services	75	353	563	59.5%
Behavior management services	76	529	2,308	336.3%
Assistive services	77	2,509	1,846	-26.4%
Braille transcription	78	130	76	-41.5%
Reader services	79	67	21	-68.7%
Note taking services	80	141	137	-2.8%
Early childhood education	81	571	n/a	n/a
Itinerant Services	83	3,263	n/a	n/a
Transition services	84	257	1,552	503.9%
Vocational counseling	85	1,061	2,038	92.1%
Deaf and hard of hearing services	86	856	3,512	310.3%
Respite care services	87	n/a	15	n/a
Transportation	90	n/a	33,603	n/a
Other special education services	99	n/a	4,964	n/a
Total number of students receiving services:		600,979	654,052	8.8%
Total sample:		600,979	656,781	9.3%

Sources: Parrish et al., 1998 and CASEMIS December 2001

Exhibit 2-17. Percentage of the Total Special Education Population Receiving Special Education Services in 1996 and 2001*

Service	Code	% of total sample receiving special education service in 1996	% of total sample receiving special education service in 2001	% Change from 1996 to 2001
Regular class with accommodation	20	n/a	1.1%	n/a
Resource services (school-based)	25	n/a	2.9%	n/a
Resource specialist program	26	44.1%	39.6%	-4.6%
Special day inclusion services	40	n/a	3.8%	n/a
Special day class in public integrated facility	41	28.4%	24.1%	-4.3%
Special day class in public separate facility	42	1.3%	0.8%	-0.5%
Language and speech	50	41.5%	38.0%	-3.5%
Home and hospital	51	0.4%	0.4%	-0.1%
Adapted physical education	52	7.8%	6.1%	-1.7%
Audiological services	53	1.0%	0.7%	-0.3%
Individual counseling	54	1.4%	1.4%	0.1%
Group counseling	55	0.7%	0.7%	0.0%
Guidance services	56	0.2%	0.1%	-0.1%
Occupational therapy	57	1.0%	3.5%	2.4%
Physical therapy	58	0.3%	0.7%	0.4%
Orientation and mobility	59	0.3%	0.3%	0.0%
Parent counseling	60	0.8%	0.5%	-0.4%
Social work services	62	0.1%	0.1%	0.0%
Vocational education training	63	2.0%	1.3%	-0.7%
Recreation services	64	0.2%	0.0%	-0.1%
Individual/small group instruction	65	1.8%	2.3%	0.5%
Vision services	66	0.7%	0.7%	0.0%
Specialized driver training	67	0.0%	0.0%	0.0%
Psychological services	68	1.0%	1.2%	0.2%
Specialized services for low incidence disabilities	71	0.4%	0.3%	-0.1%
Health and nursing - specialized	72	0.5%	0.4%	-0.2%
Health and nursing - other	73	0.7%	0.4%	-0.3%
Interpreter services	74	0.1%	0.1%	0.0%
Education technology services	75	0.1%	0.1%	0.0%
Behavior management services	76	0.1%	0.4%	0.3%
Assistive services	77	0.4%	0.3%	-0.1%
Braille transcription	78	0.0%	0.0%	0.0%
Reader services	79	0.0%	0.0%	0.0%
Note taking services	80	0.0%	0.0%	0.0%
Early childhood education	81	0.1%	n/a	n/a
Itinerant Services	83	0.5%	n/a	n/a
Transition services	84	0.0%	0.2%	0.2%
Vocational counseling	85	0.2%	0.3%	0.1%
Deaf and hard of hearing services	86	0.1%	0.5%	0.4%
Respite care services	87	n/a	0.0%	n/a
Transportation	90	n/a	5.1%	n/a
Other special education services	99	n/a	0.8%	n/a

*Note: The sum of each column exceed 100% due to the overlap in students receiving services. The percentage change column presents the difference between the unrounded figures in 1996 and 2001.

Sources: Parrish et al., 1998 and CASEMIS December 2001.

CHAPTER 3: SEVERITY ANALYSIS AND INCIDENCE OF SEVERE/HIGH COST STUDENTS

Are severe and high cost students randomly distributed?

Is the observed variability of incidence of students with severe disabilities across California greater than might be expected by chance alone and, if so, is this variation significant? These are the research questions addressed by the preliminary analyses in this chapter. As these analyses are designed to replicate those of the prior study (Parrish et al., 1998), much of the narrative in this chapter, as well as Chapter 4, draws from the 1998 report.

Several important premises appear to underlie these questions. A first premise is that observed rates of *identification* and *service* of students in special education may differ significantly from some true *incidence* of disability. Second, they appear to assume that *severity* of disability, if known precisely, is related in some systematic way to the *cost* of disability (i.e., the general level of resources needed to provide appropriate educational programs). Further, they suggest that disabilities considered “severe” are subject to less error in identification, i.e., – rates of identification are equal to *true* incidence rates – and that, once identified, students with severe disabilities will require educational programs of somewhat similar cost. The initial problem with creating a straightforward analysis to answer these questions arises from the fact that all of these assumptions are untested.

This chapter will first discuss the concepts and terminology used to describe variability of incidence, and then offer statistical analyses of the variability of incidence for both low incidence and high cost students.

Testing Statistical Significance of Variability

Given that each SELPA operates independently to identify students, do we observe variations in incidence rates across the SELPAs that are greater than would be expected by chance alone? For example, statewide incidence for the five categories we used in our Low Incidence Category Model (see Exhibit 3-1) is .47 percent. If only random factors related to place of birth and residence, for instance, influenced this rate for each SELPA, we would expect to observe variations by SELPA of only plus or minus a few hundredths of a percent.

A suitable and appropriate statistical test exists to determine how likely it is that the observed variation in proportions identified under different definitions of severity occurred by chance alone. This test is called a chi-square test. Essentially, as the difference between each SELPA’s incidence rate and the state average becomes larger, the test statistic (chi-square) indicates an increasingly small likelihood that these differences have occurred by chance.

Modeling Severity

In our analyses, we first approached the issue of variability of incidence of severity by constructing and testing two different explicit models of “severity.” In the first phase of analysis, we grouped low incidence disability categories, as a first approximation to describing a population with “severe” disabilities. In the second phase, we developed an approach of standardizing the resources allocated by schools to individual students for the purpose of identifying and comparing the incidence levels of “high cost” students across SELPAs (this approach is described in Chapter 4).

Low Incidence Category Model

Using data collected by the state, we began with a simple model of severity using five categories of disability – hard of hearing, deaf, deaf blind, visually impaired, and orthopedically impaired.⁷ We calculated these disabilities as the average of the proportions of low incidence students in each SELPA. The proportions consisted of the counts of low incidence students divided by the SELPA’s average daily attendance (ADA).

As a group, these disabilities have been treated as “low incidence” disabilities by the state, and by definition consist of sensory and physical deficiencies that can be characterized by precise medically-oriented measurements (e.g., degree of auditory and visual acuity, range of motion, tonicity, gross developmental milestones). These disabilities are known to occur at low rates in the population and they appeal, we suspect, to the lay person’s notion that they are somehow more readily, less ambiguously identified across regions and personnel than other categories of disability. In a second model, we added autism, which is considered by many to be a “severe” disability. Together, these comprised our two models of low incidence categories of severity.

We then applied the chi-square test of equal proportions to data for the 2001-02 school year for 115 *SELPAs of residence* (excluding LA court and state run schools). We further adjusted our incidence estimate by removing nonpublic school students residing in licensed children institutions (LCI) and in foster family homes (FFH) in districts different than their districts of residence. These students are removed from the analysis because it is known that their residential placements are non-random and current funding formula for these students reimburses SELPAs 100 percent of the cost for their placements.

The preliminary analysis yielded test statistics that suggest that variation is far greater than could be expected by chance differences alone in SELPA incidence rates using Low Incidence Categories and Low Incidence Categories Plus Autism (see Exhibit 3-1). Using this particular chi-square test, it seems that the SELPAs do vary in the incidence of children with severe disabilities residing within their boundaries, and that we cannot account for these variations by random influences alone. We intend to further explore alternative ways for testing variation among SELPAs in order to test the strength and the validity of our methodology and conclusions.

⁷ California Education Code (56026.5.) defines low incidence disabilities to include the following severe disabling conditions: hearing impairments, vision impairments, and severe orthopedic impairments, or any combination thereof.

As can be seen in Exhibit 3-1, the average of the proportion of all students in each SELPA identified in 2001 in five or six (including autism) low incidence categories, respectively, equaled .47 percent and .57 percent. If variations across the 115 typical SELPAs were due to random factors alone, observed incidence rates for these two models of severity would vary only by hundredths of a percentage point. In fact, however, the actual incidence rates range from .13 percent to .93 percent for the Low Incidence category and from .14 percent to 1.31 percent for the Low Incidence Plus Autism category. For the first category, the SELPA with the largest proportion of low incidence students residing within its boundaries has an incidence rate that is about *seven times* higher than the rate of the SELPA with the smallest proportion of its students in low incidence categories. In addition, for the Low Incidence Plus Autism category, the largest proportion of low incidence students is *about* nine times higher compared to the lowest proportion of low incidence students.

Exhibit 3-1. Chi Square Results To Date for the Low Incidence Category Model¹

Model of Severity	Total Number of Students	Mean %	Standard Deviation	Chi Square
Low Incidence Only ²	29,349	.47%	.14%	1,075.82
Low Incidence + Autism	46,920	.57%	.17%	2,296.88

¹Excludes LA court and state schools

² Includes Hard of Hearing, Deaf, Deaf Blind, Visually Impaired, and Orthopedically Impaired

*For samples of this size (df = 114), Chi-Square test statistics greater than 166 have probabilities less than .001

The High Cost Student Model

Because the services that students with disabilities receive is a proxy measure of the perceived severity of educational needs, we created a second model of severity related to differential allocations of resources. In this model (described in the following chapter), we used 2001-02 data from the California Special Education Management Information System (CASEMIS), the Special Education Personnel Data Report, and other sources to estimate a standard dollar value of the actual resource allocations schools had made for each of more than 640,000 special education students in the state. These estimates allowed us to determine the state average value of educational resources allocated to students with disabilities and when these allocations might be perceived as substantially (e.g., equal to or greater than one standard deviation) above average for typical special education students in California. From these data, we then characterized SELPAs according to the proportion of their high cost students. The SELPA with the lowest incidence of severity by this definition had .24 percent of students, while the SELPA of highest incidence had 3.69 percent of its ADA as high cost students. Again, the highest and lowest SELPA differed by a factor greater than 15. When subjected to the same analysis described above, the results were substantially the same – far greater ($p < .001$) variability than could reasonably be expected by chance variations alone (see Exhibit 3-2).

Exhibit 3-2 Chi Square Results To Date for the High Cost Student Model¹

Model of Severity	Total Number of Students	Mean %	Standard Deviation	Chi Square
High Cost (% ADA)	85,076	1.17%	.53%	9,703.96

¹Excluded LA court and state schools

*For samples of this size (df = 114), Chi-Square test statistics greater than 166 have probabilities less than .001

Summary

These preliminary analyses show that however we define incidence of severity – either on the basis of low incidence categories of disability or measures of above average cost *independent* of category – the observed variability across California’s 115 SELPAs is much greater than would be expected by chance alone. As mentioned, further alternative ways for testing variation among SELPAs will be examined in order to test the strength and the validity of our methodology and these preliminary conclusions.

CHAPTER 4: SEVERITY SERVICE MODEL

Development of the service model

In this section, we describe the stages of identifying and calculating the cost of special education placement and services. Sources of information in developing the model included the California Special Education Management Information System (CASEMIS, December 2001) and the Special Education Personnel Data Report for 2001-02. As these preliminary analyses are intended to replicate the prior study (Parrish et al., 1998), some of the narrative in this chapter draws from the earlier report.

For each special education student in California, CASEMIS shows disability, services received, SELPA of residence, and a host of demographic information such as age, sex, race, and residential status. In addition, the Special Education Personnel Data Report provides information on the numbers of teachers, administrators, aides and other certificated staff providing special education services. The sample used in the development of this preliminary service model includes all students and SELPAs in CASEMIS, with the following exceptions:

- (1) Children ages 0-2 (cut-off date of December 1, 1999) (2,536 students)
- (2) Group C LCI/FHH students attending NPS (described further below) (485 students)
- (3) Students whose only service is
 - a. “respite care” (1 student)
 - b. special day class in a nonpublic school (2,001 students)
 - c. preschool settings other than codes 20, 30, 40 and do not receive DIS (665 students)
- (4) Students (public, private, or parochial) without any services (328 students)
- (5) Students without a school type and who do not receive any services (1,140 students)
- (6) Exempted SELPAs (3,903 students):
 - LA County Court Schools
 - California State Special Schools
 - California Youth Authority
 - California Department of Developmental Services

The 2001 CASEMIS contained 663,220 student records. Due to the above issues, 12,386 students were not included the cost analysis.

Using CASEMIS and the state’s personnel data report for statewide counts of special education personnel, personnel categories were aligned with services, and a staff-student ratio was derived based on the services received (see Exhibit 4-1 for crosswalk). These ratios were used to calculate a cost per service. Exhibit 4-2 details the costs for the following service categories: 1) *Preschool (PRE)*, 2) *Regular Class with Accommodations (RCA)* 3) *Special Day Inclusion Services (SDIS)*, 4) *Special Day Class, (SDC)*, referring to special day classes in public

integrated facilities or public separate facilities. 5) *Resource Specialist Program* (RSP), 6) *School-Based Resource Services* (School-Based RS), 7) *Designated Instructional Services* (DIS), and 8) *Nonpublic School* (NPS), which refers to students in nonpublic day schools and nonpublic residential schools in California whose parents or legal guardians live within the district and students in nonpublic residential schools outside California (excluding Group C LCI/FFH students). See Appendix F for descriptions of these settings.

Using adaptive PE as an example, we generated a count of the total number of students receiving adaptive PE services statewide from CAESMIS, and compared it to the total number of adaptive PE instructors and recreational therapists (1,066) across the state, derived from the special education personnel data report. The ratio of children receiving services to the number of personnel was then multiplied by a single statewide standardized teacher salary and benefit amount of \$59,092, which was obtained from the 2000-01 J-90 certified staff salary files. The resulting value was the estimated cost of salary and benefits for one student receiving adaptive PE services. This approach was applied to all designated instructional services (DIS) in CASEMIS.

Estimated personnel salaries and benefits for DIS staff were further refined based on data from a recent national study on special education expenditures (Chambers, Parrish, Shkolnik, and Perez, forthcoming; see Appendix C). We multiplied J-90 average compensation by multipliers that reflect specialists' salaries relation to the average teacher salary. Multipliers were applied to audiologists (1.02), speech pathologists (1.03), physical and occupational therapists (1.09), counselors and social workers (1.1), and school psychologists (1.3).

It is important to note that variations exist between the 1998 alignment and the present crosswalk. For example, home and/or hospital instructors are no longer reported separately in the personnel report. Therefore, we aggregated students receiving these services with the group of students receiving services provided by "Other Professional Staff" (as determined by the study team). Please see the footnotes in Exhibit 4-1 for further clarification. Such reworking of the crosswalk has an impact on the cost per service, and accordingly, caution should be used in comparing the 1998 cost estimates to the ones generated in this preliminary analysis.

As the personnel alignment was uncertain for students receiving "other special education services," we used the lowest designated instruction service salary and benefits amount, which in this preliminary analysis was language and speech (\$1,234 per service). Additionally, a flat cost of \$4,650 per student was applied to students receiving special transportation services.⁸

In addition to the cost per related service, a standardized cost per student in a Special Day Class (SDC) was calculated using updated class sizes and teacher-aide ratio models developed in the previous study and further refined to reflect changes in student and staff numbers (Appendix D). The numbers of students by disability receiving SDC were divided by the class size for each disability category. The results—the number of SDC teachers—were multiplied by the standardized teacher salary. The class sizes were designed to be appropriate for each disability category, as well as generate a total number of SDC teachers that reflect the actual number of

⁸ The transportation figure of \$4,650 was obtained from the 1999-2000 Special Education Expenditures Project (SEEP), a national study on special education expenditures, adjusted to 2001-02 dollars. See Chambers, Parrish, & Lam (2002).

SDC teachers in the state. The numbers of teachers were then multiplied by the teacher-aide ratios to determine number of aides for each disability category. The number of aides was then multiplied by a standardized aide salary and benefits amount (\$21,756. See Appendix C). Therefore, the “Salary with Benefits” (Column c in Exhibit 4-2) for special day classes reflects the sum of the costs of both teachers and aides, and the total number of staff (Column g) represents both personnel types.

Likewise, the estimated cost per student with Special Day Inclusion Services (SDIS) was calculated as the sum of the per student costs for both teachers and aides. To calculate the aide cost, we used a pupil-aide ratio of 10:4 to derive the number of aides serving these students, and multiplied the outcome by the standardized aide compensation. To calculate teacher cost, we divided the number of students by the number of “other certified teachers” (1,179) taken from the personnel report, and multiplied the outcome by the average teacher salary/benefits. The Stakeholder Group indicated that these teachers often provide support to regular education teachers and modify the curriculum for special education students. Columns c and g represent the combined compensation for and number of both teachers and aides.

The per student cost of the Regular Class with Accommodations (RCA) was based solely on the number of aides serving children in RCA (based on a pupil-aide ratio of 10:1), multiplied by the average standard aide compensation.

The cost per student served in a Resource Specialist Program (RSP) was determined as the number of RSP teachers multiplied by the standardized teacher salary. A 1:1 teacher-aide ratio was used, and hence an identical number of aides was multiplied by a standardized aide compensation. The results of these calculations were summed and divided by the number of students receiving RSP services. Based on guidance from the Stakeholder Group, we applied the same cost estimate to students receiving School-Based Resource Services (School-Based RS). As above with SDC and SDIS, Column c and g in Exhibit 4-2 represent the combined cost and counts of both teachers and aides for that service, respectively.

There are several program settings for preschool in CASEMIS, including but not limited to early childhood special education, home, and part-time early childhood/part-time early childhood special education. Through discussions with the Stakeholder Group, we determined that preschool teachers provide services in those three settings, and we then allocated an aide for every preschool teacher. However, as preschoolers often do not receive services full-time (e.g., 3 days of the week), the study team applied differential percentages to the base cost of \$6,392.⁹ Sixty percent of the base (\$3,835) was applied to children receiving early childhood special education, and children receiving part time services or services in the home were given 30 percent of the base cost (\$1,918).

⁹ In deriving the base preschool cost of \$6,392, the numbers of preschool teachers (2,046) and aides (also 2,046, based on a teacher-aide ratio of 1:1) were multiplied by their respective average compensation. This sum was divided by the 25,879 preschool students receiving early childhood special education, who were treated as full-time students for this purpose.

Exhibit 4-1. Preliminary Crosswalk Between Special Education Services and Special Education Personnel, 2001

SERVICES	SPECIAL EDUCATION PERSONNEL	Total
Preschool		
Ages 3 – 5	Preschool Program Teachers (ages 3-5) ¹	2,045.5
Regular class		
Regular class with accommodation	Aides	
Special day inclusion services	Other certified teachers ¹	1,179.27
Resource Services		
Resource services (school-based program)	<i>To be determined</i>	
Resource specialist program	Resource specialists ¹	12,282.7
Special day class		
Special day class in public integrated/separate facility, Ages K-22	Special Day Class Instructor/Teacher K-22 ¹	17,830.3
Designated instructional services		
Adapted PE	Adapted Physical Education/Recreation Specialist	1,066.0
Recreational services	Adapted Physical Education/Recreation Specialist	1,066.0
Audiological services	Audiologist	88.0
Interpreter services	Interpreter (<i>Last study assigned Classified DIS Provider</i>)	794.9
Occupational therapy	Occupational Therapist	619.9
Physical therapy	Physical Therapist	89.9
Language and speech	Speech Pathologist	5,023.2
Social work services	School Social Worker and Counselor	1,033.2
Guidance Services	School Social Worker and Counselor	1,033.2
Group counseling	School Social Worker and Counselor, 20% of Psychologists	1,766
Individual counseling	School Social Worker and Counselor, 20% of Psychologists	1,766
Parent counseling	School Social Worker and Counselor, 20% of Psychologists	1,766
Psychological services	School Social Worker and Counselor, 20% of Psychologists	1,766
Vocational education training	Vocational Education Specialist	364.4
Vocational counseling	Vocational Education Specialist (<i>Last study assigned Work-Study Coordinator</i>)	364.4
Transition services	Work-Study Coordinator	49.4
Home and hospital ³	Other Professional Staff ²	2,157.4
Vision services ⁴	Other Professional Staff ²	2,157.4
Specialized driver training ⁴	Other Professional Staff ²	2,157.4
Specialized services for low incidence disabilities ⁴	Other Professional Staff ²	2,157.4
Health and nursing- specialized physical health care services ⁴	Other Professional Staff ²	2,157.4
Health and nursing - other services ⁵	Other Professional Staff ²	2,157.4
Education technology services ⁵	Other Professional Staff ²	2,157.4
Behavior management services ⁵	Other Professional Staff ²	2,157.4
Assistive services ⁵	Other Professional Staff ²	2,157.4
Braille transcription ⁵	Other Professional Staff ²	2,157.4
Reader services ⁵	Other Professional Staff ²	2,157.4
Note taking services ⁵	Other Professional Staff ²	2,157.4
Deaf and hard of hearing services ⁴	Other Professional Staff ²	2,157.4
Individual and small group instruction	Other Professional Staff (<i>Last study assigned Resource Specialist</i>) ²	2,157.4
Orientation and mobility	Other Professional Staff (<i>No longer have Mobility Specialist</i>) ²	2,157.4
Transportation	n/a	
Other special education services	n/a	

¹In addition to teachers, special education aides have been allocated to these services when calculating costs. For SDC teachers, differential class sizes by disability were used to calculate costs. See Appendix D for class sizes, aide ratios, and numbers of staff by service type generated by the ratios.

²"Other Professional Staff" aggregates the eight rehabilitation counselors in the 2001-02 Special Education Personnel Data Report.

³Home and/or Hospital Instructors are not recorded by 2001-02 Special Education Personnel Data Report, therefore services were reassigned to "Other Professional Staff."

⁴These services were provided by the following categories in the previous study: "Other Certified DIS provider," "Other Licensed Personnel," "Other Diagnostic Staff," and "Other Professional Staff." Because the current Special Education Personnel Data Report no longer reports on the first three personnel categories, these services were reassigned to "Other Professional Staff."

⁵These services were provided by "Classified DIS Provider" in the previous study. Because the current Special Education Personnel Data Report no longer reports on this personnel category, these services were reassigned to "Other Professional Staff."

In addition to calculating standardized instructional costs for each service, multipliers were also uniformly applied to reflect nonpersonnel and administrative costs (see Appendix C). Using a 1.0457 multiplier, nonpersonnel costs were added to the salary and benefits amount (in Column a) to equal the full instructional cost (Column d). Administrative costs were then added to the instructional cost (Column e), using a 1.0845 multiplier. These multipliers, derived from recent national data on special education expenditures, were uniformly applied across all services (except NPS settings) and SELPAs. Consistent with the standardized approach, students receiving speech in rural SELPAs would show the same standardized service cost estimate as that applied to students in urban SELPAs. The estimates used in the model for each service are shown in Column e of Exhibit 4-2.

The standardized cost for nonpublic school (NPS) students who reside within the district with their parents and legal guardians (Group A) and for NPS students who are in foster family homes or licensed children's institutions (LCI) whose parents live in the same district in which the FFH/LCI is located (Group B) was derived from the CDE's Annual NPS/LCI Apportionment data file for 2001-02.¹⁰ Group C students are LCI/FFH students who are originally from a different district and are placed in a district of service by an outside agency. We calculated the per pupil cost of \$27,392 for Group A and B students by dividing the total expenditures on LCI/FFH NPS students by the ADA of that population. Based on our previous findings (Parrish et al., 1998), the cost per Group A student is similar to the cost per Group B and C student. In addition, having insufficient research findings in this regard, we assume that residential status does not play a critical role in establishing the cost of services for NPS students, hence the current estimate is the best available approximation. To date, the costs of Group C students are excluded from current analysis, as they are funded 100 percent by the state. Further consideration will need to be given to these students, as it is anticipated that the state may move away from full funding.

The research team used the estimated standardized costs to date for services to calculate an individualized total cost of services for each child in CASEMIS. For public school students, the total cost was the sum of all services that a student received. As mentioned, a placeholder of \$27,392 was applied for Group A and B students attending nonpublic schools. Further analysis will be conducted to calculate costs for these students

¹⁰ There were 134 Group A children and 17 Group B LCI/FFH children who attend out-of-state NPS. For the purpose of these preliminary analyses, they were given a placeholder of \$27,392 pending further analysis.

Exhibit 4-2. Estimated Average Standard Cost Per Student by Special Education Service to Date, 2001

Service Category	Service Type	Salary with Benefits	Instructional Cost*	Cost Including Admin*	Total Number of Students	Total Number of Staff
(a)	(b)	(c)	(d)	(e)	(f)	(g)
Ages 3-5						
PRE	Early childhood special education setting	\$3,835	\$4,010	\$4,349	25,879	4,092
	Home	\$1,918	\$2,005	\$2,175	6,439	4,092
	Part-time early childhood/part-time early childhood special education setting	\$1,918	\$2,005	\$2,175	914	4,092
Ages 6-22						
RCA		\$2,176	\$2,275	\$2,467	7,167	717
SDIS		\$11,580	\$12,110	\$13,133	24,214	9,686
SDC	Mentally Retarded	\$8,085	\$8,454	\$9,169	29,110	5,822
	Hard of Hearing	\$15,288	\$15,986	\$17,337	1,889	787
	Deaf	\$19,651	\$20,549	\$22,285	2,355	1,319
	Speech/Language Impaired	\$8,085	\$8,454	\$9,169	14,889	2,978
	Visually Impaired	\$16,375	\$17,124	\$18,571	1,594	744
	Seriously Emotionally Disturbed	\$16,677	\$17,440	\$18,913	9,473	4,306
	Orthopedically Impaired	\$14,381	\$15,038	\$16,309	6,781	2,543
	Other Health Impairment	\$8,085	\$8,454	\$9,169	5,445	1,089
	Specific Learning Disability	\$6,954	\$7,272	\$7,887	73,399	12,011
	Deaf Blind	\$25,651	\$26,823	\$29,090	108	81
	Multi-Disabled	\$18,345	\$19,184	\$20,805	3,675	1,838
	Autism	\$17,101	\$17,882	\$19,393	8,593	4,297
	Traumatic Brain Injury	\$18,345	\$19,184	\$20,805	619	310
RSP		\$3,833	\$4,008	\$4,347	259,093	24,566
School Based RS		\$3,833	\$4,008	\$4,347	19,125	n/a
Ages 3-22						
DIS	Language and speech	\$1,234	\$1,291	\$1,400	247,701	5,023
	Home and hospital	\$3,201	\$3,348	\$3,630	39,816	2,157
	Adapted physical education	\$1,566	\$1,637	\$1,776	40,233	1,066
	Audiological services	\$1,237	\$1,294	\$1,403	4,287	88
	Individual counseling	\$5,083	\$5,315	\$5,764	24,290	1,766
	Group counseling	\$5,083	\$5,315	\$5,764	24,290	1,766
	Guidance services	\$2,764	\$2,891	\$3,135	24,290	1,033
	Occupational therapy	\$1,830	\$1,913	\$2,075	21,827	620
	Physical therapy	\$1,379	\$1,442	\$1,564	4,204	90

Exhibit 4-2. Estimated Average Standard Cost Per Student by Special Education Service to Date, 2001 (Continued)

Service Category	Service Type	Salary with Benefits	Instructional Cost*	Cost Including Admin*	Total Number of Students	Total Number of Staff
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Orientation and mobility	\$3,201	\$3,348	\$3,630	39,816	2,157
	Parent counseling	\$5,083	\$5,315	\$5,764	24,290	1,766
	Social work services	\$2,764	\$2,891	\$3,135	24,290	1,033
	Vocational education training	\$2,025	\$2,118	\$2,297	10,620	364
	Recreation services	\$1,566	\$1,637	\$1,776	40,233	1,066
	Individual /small group instruction	\$3,201	\$3,348	\$3,630	39,816	2,157
	Vision services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Specialized driver training	\$3,201	\$3,348	\$3,630	39,816	2,157
	Psychological services	\$5,083	\$5,315	\$5,764	24,290	1,766
	Specialized services for low incidence disabilities	\$3,201	\$3,348	\$3,630	39,816	2,157
	Health and nursing - specialized	\$3,201	\$3,348	\$3,630	39,816	2,157
	Health and nursing - other	\$3,201	\$3,348	\$3,630	39,816	2,157
	Interpreter services	\$23,154	\$24,212	\$26,258	747	795
	Education technology services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Behavior management services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Assistive services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Braille transcription	\$3,201	\$3,348	\$3,630	39,816	2,157
	Reader services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Note taking services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Transition services	\$1,874	\$1,960	\$2,125	1,545	49
	Vocational counseling	\$2,025	\$2,118	\$2,297	10,620	364
	Deaf and hard of hearing services	\$3,201	\$3,348	\$3,630	39,816	2,157
	Transportation	-	-	\$4,650	33,601	n/a
	Other special education services	\$1,234	\$1,291	\$1,400	4,964	n/a
NPS Group A		-	-	-	\$27,392	8,926
NPS Group B		-	-	-	\$27,392	2,927

* "Instructional Cost" component reflects the salary and benefits amount multiplied by 1.0457, to account for non-personnel costs in providing services. The "Cost Including Administration" is the instructional cost multiplied by 1.0845, to account for administrative costs. These multipliers are discussed in Appendix C.

Exhibit 4-3 illustrates the individualized service cost estimates for seven sample students drawn from the CASEMIS file. Although SELPAs can record up to eight services per student, in the interests of space, the exhibit includes up to four. Even with this cap, it still demonstrates a range of individual estimated costs. Student A receives three services: “Speech and Language,” “Group Counseling,” and “Occupational therapy.” Because the student does not receive RSP, SDC, or NPS services, he does not incur those costs. Therefore the total projected service cost for this student is only the sum of expenses for the DIS services, which is \$9,239.

On the other hand, Student B and C are served in a Special Day Class (SDC). As shown in Exhibit 4-2, the service cost is associated with the student’s disability category. Student B is hard of hearing, thus his SDC cost is \$17,334. Student C is deaf, and therefore his SDC cost is \$22,285 (differential ratios for hard of hearing and deaf students in SDC were developed in the 1998 study and revised for the current analysis). The projected cost in both cases is calculated as the summation of the SDC cost and the expenses of the DIS services that the student receives. Both Student B and C are regarded as “high-cost students” as their total cost exceeds the cutoff point determined by the research team (to be discussed in Chapter 4).

Student D is served in a RSP program. The cost for this student is the value of an RSP service plus the estimated rate for Language and Speech service. Student E is similar to Student D in that he is also served in a RSP program. However, this student does not receive additional services. Thus, his total cost equals the RSP cost only. Student F is placed in Special Day Inclusion Services setting. Thus, the cost for this student reflects the expenses of this setting plus the cost of any additional services that the student receives. Student G is in a preschool setting, and although he is receiving SDC services, the cost of the preschool setting (\$4,349) is assumed to reflect all placement settings. It should be noted that Exhibit 4-3 represents examples of public school students. For Group A and Group B nonpublic school students, as mentioned above, the cost is a fixed value regardless of the student’s setting and services. A more accurate standardized cost estimation attuned to the unique profiles of these NPS students is anticipated for the final report, based on the recommendations and guidance from the Stakeholder Group.

Exhibit 4-3. Sample of Seven Students and Unique Service Cost Estimates, To Date

Student	SELPA	Disability	Service 1	Service 2	Service 3	Service 4	Total Cost
A	Tri Valley	Speech and Language	Language and Speech (\$1,400)	Group Counseling (\$5,764)	Occupational therapy (\$2,075)	-	\$9,239
B	Fresno Unified	Hard of Hearing	Special Day Class in Public Integrated Facility (\$17,334)	Occupational therapy (\$2,075)	Adapted Physical Education (\$1,776)	Language and Speech (\$1,400)	\$22,585
C	Fresno County	Deafness	Special Day Class in Public Integrated Facility (\$22,285)	Interpreter services (\$26,258)	Individual Counseling (\$5,764)	Language and Speech (\$1,400)	\$55,707
D	Kern County	Speech of Language Impairment	Resource Specialist Program (\$4,347)	Language and Speech (\$1,400)	-	-	\$5,662
E	Alameda County	Specific Learning Disability	Resource Specialist Program (\$4,347)	-	-	-	\$4,347
F	North Region	Speech and Language	Special Day Inclusion Services (\$13,133)	Language and Speech (\$1,400)	Occupational Therapy (\$2,075)	Orientation and mobility (\$3,630)	\$20,238
G	North Region	Orthopedic Impairment	Special Day Class in Public Integrated Facility ¹ (\$4,349)	Language and Speech (\$1,400)	Adapted Physical Education (\$1,775)	Occupational Therapy (\$4,650)	\$12,174

Note. Costs of services appear in parentheses under services names.

¹ This is a preschool student placed in Early Childhood Special Education Setting, thus his cost is based on the cost for this setting (\$4,349) and not the cost for a Special Day Class Setting for that disability category.

It is important to base the analyses on the SELPA of residence as opposed to the SELPA of service. If we only looked at SELPA of service to account for special education students, we would exaggerate the incidence of disabilities of SELPAs that have students transferred in, and underestimate the incidence of SELPAs that place students outside the SELPA. With this re-aggregation, the research team was able to calculate the total projected cost of services for each SELPA, as well as to calculate an average cost per student by SELPA. It was then possible to compare these SELPA averages with the overall state average. The average statewide cost of services per special education student in the preliminary simulation (presented in Exhibit 5-1) is \$6,912.

CHAPTER 5: SEVERITY SERVICE ADJUSTMENT

The approach used to calculate the severity service adjustment focuses specifically on the population of high cost students in each SELPA. As described in Chapter 4 of this report, each student was assigned a unique service cost using standardized cost estimates based on services received. From these unique service costs, we were able to array students by cost, and subsequently by SELPA of residence. Using these arrays of students, we calculated the statewide average cost per special education student, and determined the distribution of costs, or standard deviation, around the average. Based on the standardized approach, the average cost per special education student is \$6,912, and the standard deviation is \$6,008. The mean plus standard deviation was then used as the cutoff of high cost students. All students with cost profiles at or above \$12,920 ($\$6,912 + \$6,008$) were included in the severity service adjustment model. These are preliminary estimates to date.

These initial analyses produce a statewide estimate of special education for school-aged children of \$4.5 billion. The estimated cost to the state for implementing the revised, preliminary incidence multipliers is \$128.7 million in the first year. The figures presented in this report are tentative and likely to change, pending the resolution of various cost issues, discussions with stakeholders, and further data analysis.

The severity service model, first developed by Parrish et al. (1998) and refined in this analysis, compares the net costs of a SELPA's high cost students to the net revenues the SELPA receives under its AB 602 base rate per student. The resulting severity service adjustment is calculated and applied through a set of procedures summarized in Exhibit 5-1. Exhibit 5-1 shows the model as it applies to 15 unidentified SELPAs. As this is a work in progress and expected to change, the team decided not to present data on all 115 SELPAs. The components of the model are explicated below.

Col. A presents the SELPA name.

Col. B is the SELPA current base state allocation, taken from the AB 602 for 2001-02.

Col. C is the number of all students with cost profiles at or above \$12,920.1 (high-cost students).

Col. D represents the number of students that exceeds the maximum for high cost-students. This is calculated using the following steps.

- Derive the statewide average percentage of high cost students (1.39%), and based on the variations in this percentage across SELPAs, derive a measure of the standard deviation (SD) of this distribution (.57%). The mean percentage (1.39%) plus the SD (.57%) was used as a ceiling on the allowable percentage of high cost students (1.96%). This mean percentage (1.39%) differs from the mean (1.17%) used in the chi square analysis test for high cost students (Exhibit 3-2). The second mean represents the average of the proportions of high cost students in each SELPA, whereas the mean used in the severity service model is the number of high cost students statewide divided by total ADA statewide.
- Multiply the allowed rate by the SELPA's ADA to determine allowed number of high cost students. Subtract the allowed amount of high-cost students from the actual amount

of high cost students to determine the number of students exceeding the maximum. Place the result in Column D.

Col. E shows what would be the number of high cost students in a SELPA if its proportion of the ADA was equal to the state average proportion. This column was calculated by multiplying the state average proportion (1.39%) by Column F.

Col. F presents the 2001-2002 ADA based on the AB 602 report.

Col. G is the percentage of high cost students by SELPA as a percentage of total ADA (Column C divided by Column F).

Col. H is the sum of the estimated cost per student for all high cost students within a SELPA.

Col. I Based on an array of the distribution of high cost students by total cost a natural break point was observed at \$36,000. This was used as the ceiling allowable amount to be calculated for individual high cost students. The difference between this ceiling and the actual standardized cost estimates for these students was calculated by SELPA and are shown in Column I.

Col. J is a standardized estimate of the total cost of the number of students that exceeds the maximum for high cost students (Column J = Column D * \$12,920). It is used to determine each SELPA's deduction if in excess at the allowable ceiling high cost incidence rate.

Col. K is the total NET amount for high cost students by SELPA. (Column K = Column H – (Column I + Column J)).

Col. L shows an estimate of what the total high cost student amount would be if the SELPA were serving students at the state average. This is calculated using the following steps:

- Determine the state average high cost student amount (\$19,603) by dividing the net high cost total for the state (\$1,667,714,849 from Column H) by the net high cost student count of 85,076 from Column C.
- Multiply the state average high cost student cost by the number of high cost students in a SELPA which represents the state average proportion (Column L = Column E * \$19,603).

Col. M shows an estimate of total revenues per SELPA by multiplying each SELPA's current base state allocation (Column B) by its ADA count (Column F).

Col. N shows what these revenues would be at the target rate per ADA (\$506) by multiplying this amount by the ADA count in Column F.

Col. O is the excess high cost student amount. This is the difference between what the SELPA is providing to high cost students in relation to what they would be providing at the statewide average (Column O = Column K – Column L). This value only appears in Column O when positive (i.e. Column K is greater than Column L), to indicate *excess* high cost student amounts.

It should be noted that when Column K is compared to Column L, the deductions from Column K (i.e. I and J) have not been applied to Column L. For this reason, the excess high cost student amount shown in Column O somewhat underestimates the full excess costs for this population of students. The deductions shown in Columns K and L are designed to allow excess costs beyond the specified ceiling to be borne at the SELPA level, reducing any future fiscal incentives to provide high cost services.

Col. P is the excess revenues over the state average (Column M - Column N). It is shown only when positive (i.e. when there are excess revenues over the state average).

Col. Q represents the severity supplement for each SELPA. It is calculated as the amount left from Column O (excess high costs) after any excess revenues beyond the state average (Column P) have been fully counted.

Col. R is the Incidence Multiplier. It is calculated by dividing Column O, excess high cost, by Column N, estimated total revenue at the state average. If supplemental high costs are not shown in Column O, this multiplier is set at 1.0.

Col. S represents the supplement per ADA. It is calculated by multiplying the incidence multiplier (Column R) by the statewide target rate per ADA of \$506. Column S represents the amount per ADA above the target rate per ADA a SELPA is eligible to receive. Some of these funds are included in the SELPAs' base rate (Column P) and the balance in their severity supplement (Column Q).

Col. T With the Incidence Multiplier, it is possible to calculate the growth ADA rate for each SELPA, adjusting for the incidence of disabilities, consistent with the language of SB 1564, Section 17. Future growth ADA rate per SELPA is calculated by multiplying the Incidence Multiplier (Column R) by the state target AB 602 rate of \$506.

Exhibit 5-1 provides a very preliminary picture of what updated data would produce for select SELPAs, through an attempted replication of the approach used in the prior study. Based on these very preliminary, initial results, the estimated total cost to the state of implementing the severity supplement is approximately \$128.7 million in the first year.

Exhibit 5-1. Severity Service Adjustment to Date for Select SELPAs, Based on 2001 Data

A	B	C	D	E	F	G	H	I	J	K
SELPA name	Current base state alloc	# of high cost students	# of students over max cost	# of high cost students at state ave.	01-02 ADA	% high cost students of ADA	Total costs of high cost students	Cost per student over max	Total SELPA cost over max	Total NET SELPA cost
SELPA A	470	360	0	522	37,544	0.96%	\$7,502,148	\$0	\$0	\$7,502,148
SELPA B	470	678	0	1,081	77,800	0.87%	\$14,947,719	\$14,677	\$0	\$14,933,042
SELPA C	470	381	0	779	56,058	0.68%	\$8,421,616	\$0	\$0	\$8,421,616
SELPA D	470	1,940	439	1,065	76,586	2.53%	\$39,950,783	\$434,369	\$5,671,924	\$33,844,490
SELPA E	470	1,478	0	1,945	139,950	1.06%	\$32,209,985	\$257	\$0	\$32,209,728
SELPA F	471	852	0	1,145	82,373	1.03%	\$19,404,595	\$71,840	\$0	\$19,332,755
SELPA G	477	186	0	311	22,401	0.83%	\$3,486,755	\$0	\$0	\$3,486,755
SELPA H	509	563	0	659	47,376	1.19%	\$12,965,632	\$49,988	\$0	\$12,915,644
SELPA I	470	276	0	503	36,158	0.76%	\$5,928,490	\$23,395	\$0	\$5,905,095
SELPA J	470	621	0	681	48,962	1.27%	\$14,133,429	\$361,757	\$0	\$13,771,672
SELPA K	470	608	0	923	66,413	0.92%	\$11,566,611	\$268,748	\$0	\$11,297,863
SELPA L	471	1,134	0	1,054	75,840	1.50%	\$22,698,883	\$670,119	\$0	\$22,028,764
SELPA M	472	178	0	664	47,770	0.37%	\$3,395,010	\$0	\$0	\$3,395,010
SELPA N	594	174	0	126	9,070	1.92%	\$2,614,347	\$0	\$0	\$2,614,347
SELPA O	470	495	0	787	56,618	0.87%	\$10,365,302	\$0	\$0	\$10,365,302

	L	M	N	O	P	Q	R	S	T
SELPA name	Est total high cost amt at state ave	Est total revenues	Est total revenues at state ave	Excess high cost amt	Excess revenues over state ave	Severity adjustment	Incidence multiplier	Supplement per ADA	Future growth ADA rate
SELPA A	\$10,229,512	\$17,645,647	\$18,997,229				1.00		506
SELPA B	\$21,197,891	\$36,565,821	\$39,366,608				1.00		506
SELPA C	\$15,274,117	\$26,347,462	\$28,365,566				1.00		506
SELPA D	\$20,867,088	\$35,995,194	\$38,752,273	\$12,977,402		\$12,977,402	1.33	169.45	673
SELPA E	\$38,131,978	\$65,776,688	\$70,814,902				1.00		506
SELPA F	\$22,443,990	\$38,797,683	\$41,680,738				1.00		506
SELPA G	\$6,103,551	\$10,685,277	\$11,334,906				1.00		506
SELPA H	\$12,908,552	\$24,114,603	\$23,972,474	\$7,092	\$142,129		1.00	0.15	506
SELPA I	\$9,851,896	\$16,994,269	\$18,295,958				1.00		506
SELPA J	\$13,340,568	\$23,012,140	\$24,774,772	\$431,104		\$431,104	1.02	8.80	516
SELPA K	\$18,095,303	\$31,213,936	\$33,604,791				1.00		506
SELPA L	\$20,664,059	\$35,720,814	\$38,375,227	\$1,364,705		\$1,364,705	1.04	17.99	526
SELPA M	\$13,015,746	\$22,547,369	\$24,171,544				1.00		506
SELPA N	\$2,471,365	\$5,387,758	\$4,589,572	\$142,982	\$798,186		1.03	15.76	521
SELPA O	\$15,426,645	\$26,610,568	\$28,648,824				1.00		506

Estimated state special education spending: \$4,498,607,032
Average special education cost per student: \$6,912
Standard deviation: \$6,008
High cost cutoff: \$12,920
State average % of high cost students 1.39%
Standard deviation: .57%
Total state cost for severity adjustment: \$ 128,683,919

Number of high cost students: 85,076
Average SE cost per high cost student: \$19,603
Standard deviation: \$6,382
Lowest cost of high cost students: \$12,920
Highest cost for high cost students: \$72,950
Highest cost ceiling: \$36,000

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APPENDICES

APPENDIX A

Incidence Study Stakeholder Group Meeting Overview

March 11, 2003
Sacramento, CA

In attendance:

Jerry Shelton, CDE
Paul Warren, LAO
Julie Williams, CDE
Mark Allen, Fresno SELPA
Kimberly McDaniel, CDE SED
Larry Belkin, OCDE
Mark Shrager, LAUSD
Aileen Taguchi, LAUSD
Jack Lucas, East San Gabriel Valley SELPA
Sarge Kennedy, Tehama SELPA
Kay McElrath, SDUSD
Tom Parrish, AIR
Jenifer Harr, AIR
Yael Kidron, AIR
Leslie Brock, AIR

- (1) Tom Parrish provided an overview of the current Incidence Study, the research questions, and AIR's proposed approach
- (2) Tom Parrish provided an overview of the previous Incidence Study
- (3) The following are points of discussion raised by AIR to the group:
 - a. The funding adjustment: Tom asked the group if they believed the funding adjustment was fair and feasible. Larry Belkin said OCDE serves primarily high cost students, although they did not receive an adjustment. Otherwise, the members thought the adjustment was reasonable and had few comments about it.
 - b. AIR's proposed approach: A few stakeholders said we should discard the prior approach and start completely anew. It was generally agreed upon that, due to the very short timeline for this study, we should use the previous study as a starting point and reference, though not discard the whole approach nor replicate it fully. This is the approach AIR is planning to take.
 - c. Proxy measures: Jen Harr presented the possibility of using census mapping data aggregated by district, which provides disabilities for ages 5-15. The members looked at a sample of districts across their SELPAs, and believed the data were inaccurate. One

member said poverty would be a better indicator. As another proxy measure, Jen Harr presented a copy of a birth certificate, as filled out by a doctor, which would indicate abnormal medical conditions at birth. We would look at these data by county as another source of information. Larry Belkin is going to check with a nurse about medical conditions related to disability and bring the information to the next meeting.

d. Unresolved issues in regard to NPS and LCI funding: Tom mentioned that some unresolved issues in the Group Homes Study may affect the Incidence Study, i.e., 100 percent funding and whether to factor these students into the severity adjustment model. This will be dependent on whether funding recommendations in the Group Homes Study are accepted by the state. Mark Allen, Larry Belkin, and Kay McElrath will obtain estimates of LCI/NPS spending in their regions on a daily rate, with context, and bring to the next meeting. Leslie Brock will send out the Group Homes Final Report as soon as it is available.

e. Other issues:

- i. AIR will look at CASEMIS data over time (from 96-97 to most current year, 01-02) for patterns of disability and funding distribution. The group expressed concerns with this undertaking, as there are differences in how district report services between the past and the most current year. Members stated a belief that the present system creates an incentive for identifying services, which did not exist in the prior study; therefore, the data may not be comparable. Julie Williams will provide data on patterns of fiscal distribution across SELPAs.
- ii. Tom Parrish raised the question of how to cost-out inclusionary settings. The research team will analyze supplemental services to do this; the new service-based CASEMIS should inform this process.
- iii. Mark Allen noted that there has been a substantial growth in the identification of autism, to which Larry Belkin concurred. Mark also stated that autism, as well as emotional disturbance, is the most expensive disability categories. The AIR team agreed these disability categories may warrant special consideration during the analyses.
- iv. The group would like a representative from a regional center come to the next meeting to talk. Larry Belkin is going to contact one for the next meeting.
- v. Sarge has a reporting form that enables him to derive an average expenditure by severely disabled student. The AIR team would like to know more about this form.

f. Stakeholder Group membership: No suggestions were made for additional members to the group. Tom asked everyone to contact him if they think of someone who may be a good candidate for the group.

g. Future meetings: The next meeting will be on April 7, 10am-3pm, in Sacramento.

APPENDIX B. INCIDENCE MULTIPLIER FACTORS¹¹

SELPA Alpha	SELPA Name	Multiplier Factor
AA	Plumas USD	0.0000
AB	Madera/Mariposa	0.0000
AC	Kings COE	0.0000
AD	Colusa COE	0.0000
AE	Tehama COE	0.0000
AF	Kern HSD	0.0000
AG	Ventura COE	0.0000
AH	Trinity COE	0.0000
AJ	San Luis Obispo COE	0.0000
AL	Lassen COE	0.0000
AM	Kern COE	0.0000
AN	Riverside COE	0.0000
AO	Shasta COE	0.0000
AP	Tuolumne COE*	0.0329
AQ	Mendocino COE*	0.0836
AR	Santa Barbara COE	0.0000
AS	Monterey COE	0.0000
AT	Marin COE	0.0000
AU	Siskiyou COE*	0.1354
AV	Sonoma COE	0.0000
AW	Sierra COE	0.0000
AY	Contra Costa COE*	0.0301
AZ	West Contra Costa USD*	0.1391
BA	Mt. Diablo USD	0.2224
BB	Bakersfield CESD	0.0000
BC	Yuba COE	0.0000
BD	San Joaquin COE	0.0000
BE	Fresno COE	0.0000
BF	Inyo COE	0.0000
BG	Placer/Nevada	0.0000
BH	Yolo COE	0.0301
BI	Northeast Orange	0.0030
BJ	Sacramento COE	0.0000
BK	West Orange	0.1568
BL	Newport-Mesa USD	0.0254

¹¹ Forty-four of the 115 SELPAs have incidence multipliers above 0.0 based on the approach developed in the previous study, although 10 eligible SELPAs did not receive an adjustment due to equalization factors. These SELPAs are flagged with an asterisk (*).

SELPA Alpha	SELPA Name	Multiplier Factor
BM	Orange USD	0.0930
BN	Santa Ana USD	0.0000
BO	Garden Grove USD	0.2798
BP	Irvine USD	0.1185
BQ	Fresno USD	0.0535
BR	Stockton CUSD	0.0000
BS	Sacramento CUSD	0.0531
BT	Solano COE	0.0000
BU	El Dorado COE	0.0000
BV	Sutter COE	0.0000
BW	San Diego CUSD	0.2977
BX	Tri-City SELPA	0.1688
BY	Whittier Area	0.0764
BZ	Imperial COE	0.0000
CA	San Mateo COE	0.0000
CB	Mono COE	0.0000
CC	Lake COE	0.0000
CD	Vallejo CUSD	0.1923
CE	Butte COE	0.0000
CF	Napa COE	0.2025
CG	Tulare COE	0.0000
CH	Riverside USD	0.0657
CI	Glenn COE	0.0000
CJ	Los Angeles USD	0.2171
CL	Oakland USD	0.1400
CM	Modoc COE	0.0000
CN	San Juan USD	0.0000
CP	Lake Tahoe USD/Alpine	0.0997
CR	North Region*	0.0914
CS	Alameda County	0.0000
CT	Mission Valley	0.0123
CU	Tri-Valley	0.0000
DA	Antelope Valley*	0.0031
DC	Mid-Cities	0.0000
DF	Santa Clarita	0.0000
DG	Southwest	0.0497
DJ	Foothill Consort.	0.0419
DL	Long Beach USD	0.0004
DM	Downey-Montebello	0.0000
DN	Pasadena City Unif	0.2913
DQ	Lodi USD	0.0000
DU	Norwalk-La Mirada/ABC	0.0325
DX	East San Gabriel	0.0147
DY	West San Gabriel	0.0000
DZ	Puente Hills	0.0220

SELPA Alpha	SELPA Name	Multiplier Factor
EG	Elk Grove USD	0.0000
EN	Corona-Norco USD	0.0000
FA	Fontana USD	0.0000
FB	Clovis USD	0.0000
MA	Greater Anaheim	0.0000
MB	South Orange	0.0000
MC	Anaheim CESD	0.0000
MM	North Orange	0.0000
MV	Moreno Valley USD*	0.0297
NB	Santa Clara COE: III*	0.2165
NC	Santa Clara COE: IV	0.0000
ND	Santa Clara COE: V	0.0000
NE	Santa Clara COE: VI	0.0000
NF	Santa Clara COE: VII	0.0000
NN	Santa Clara COE: I	0.0000
PA	South Bay	0.0776
PB	North Inland	0.0429
PC	East COE	0.1297
PP	North Coastal	0.0000
PV	Pajaro Valley USD	0.2018
PW	Poway CUSD	0.0000
QQ	Santa Clara COE: II	0.0000
RA	Morongo USD	0.1677
RR	Desert/Mountain	0.0000
SB	San Benito COE	0.0000
SC	North Santa Cruz Co	0.0000
SS	West End	0.0000
TA	San Bernardino CUSD	0.0000
TT	East Valley	0.0387
UU	Humboldt/Del Norte	0.0000
VV	Merced COE	0.1448
WW	San Francisco COE/USD*	0.1864
XX	Stanislaus COE	0.0000
YY	Tustin USD	0.0000
ZZ	Modesto City Schools	0.0000

APPENDIX C. TEACHERS' SALARIES, AIDES' SALARIES, AND MULTIPLIERS

1. *Teacher standardized average salary and benefits* were estimated based on the weighted mean compensation for the state (\$59,092) in 2001-02.¹²
2. Based on recent national special education expenditure data from the Special Education Expenditure Project (SEEP),¹³ the team determined how some specialists' compensation looked in relation to the average. These weights were then applied to the average salary and benefits in California (\$59,092), when calculating costs per service.

Personnel	Average SEEP Salary with Benefits (1999-2000)	SEEP Salaries Weight in Relation to Average
Audiologist	\$48,422	1.02
Speech/Language Specialist	\$48,735	1.03
Guidance Counselor	\$50,124	1.06
Social Worker	\$51,101	1.1
Physical/Occupational Therapist	\$51,679	1.1
School Psychologist	\$61,516	1.30
Average	\$47,245	1.00

3. *Aide's standardized average salary and benefits* (\$21,756) were calculated from the average aide compensation used in the prior report (\$19,001, see Parrish et al., 1998), inflated according to the Consumer Price Index adjusted to the 2001-02 school year.
4. Nonpersonnel multiplier for the calculation of "Instructional Costs" and administration multipliers for the calculation of "Cost including Administration" (Exhibit 4-2) were derived from recent national data on special education expenditures.¹⁴ The nonpersonnel multiplier (1.0457) was calculated as one plus the ratio between nonpersonnel expenditure (\$1,415,365,556) and personnel expenditure expenditures (\$30,970,277,569). The administrative multiplier (1.0845) was calculated as one plus the ratio between administration expenditure per student (\$683) divided by special education spending per student (\$8,080).

¹² Source: The J-90 salary and benefits files for certified staff for the 2001-02 school year, obtained from the California Department of Education.

¹³ Source: Chambers, J.G., Parrish, T., Shkolnik, J., & Perez, M. (forthcoming). *Total Expenditures for Students with Disabilities: Variation by Disability*. Palo Alto, CA: American Institutes for Research.

¹⁴ Source: Chambers, J.G., Parrish, T., & Harr, J. J. (2002). *What Are We Spending on Special Education Services in the United States, 1999-2000*. Palo Alto, CA: American Institutes for Research.

APPENDIX D. CLASS SIZE AND AIDE RATIOS

Exhibit D-1. Class Size and Aide Allocations for Special Day Classes by Disability

Disability	Students ¹	Class Size ²	Teacher FTEs	Aide per Teacher ²	Aide FTEs
Mentally Retarded (MR)	29,110	10	2,911.0	1.0	2,911.0
Hard of Hearing (HH)	1,889	6	314.8	1.5	472.8
Deaf (DEAF)	2,355	5	471.0	1.8	847.8
Speech/Language Impaired (SLI)	14,889	10	1,488.9	1.0	1,488.9
Visually Impaired (VI)	1,594	6	265.7	1.8	478.2
Seriously Emotionally Disturbed (SED)	9,476	5.5	1,722.4	1.5	2,583.5
Orthopedically Impaired (OI)	6,781	6	1,130.2	1.25	1,412.7
Other Health Impairment (OHI)	5,445	10	544.5	1.0	544.5
Specific Learning Disability (SLD)	73,399	11	6,672.6	0.8	5,338.1
Deaf Blind (DB)	108	4	27.0	2.0	54.0
Multi-Disabled (MD)	3,675	5	735.0	1.5	1,102.5
Autism (AUT)	8,593	6	1,432.2	2.0	2,864.3
Traumatic Brain Injury (TBI)	619	5	123.8	1.5	185.7
Total Staff Generated by Model			17,839.0		20,283.5
Total Staff in 2001-02 Special Education Personnel Report			17,860.3		45,137.9
Difference			21.3		24,854.4

¹ December 2001 CASEMIS

² Revised model, initially based on class sizes and aide allocations specified by the 1998 Advisory Committee Members Gross, Owens, del Castillo, and Shrager (Parrish et al, 1998).

Exhibit D-2. Aide Allocations for Other Settings

Other Settings	Aide Per Teacher	Aide Per Student	Aide FTEs
Preschool	1.0	-	2,045.5
Regular Class with Accommodation	-	0.1	716.7
Special Day Inclusion Services	-	0.4	9,685.6
Resource Specialist Program	1.0	-	12,282.7
Special Day Class	See above.	-	20,283.5
Total Aides Generated by Ratios			45,014.0
Total Aides in 2001-02 Special Education Personnel Report			45,137.9
Difference			123.9

APPENDIX E. DEFINITIONS OF PLACEMENTS

Regular Class with Accommodations: Student is educated in the general education classroom. Accommodations to the general education curriculum are determined and implemented through collaboration between general and special education personnel.

Resource Services (school-based program): Services to address student's IEP goals are provided in an integrated resource program including general education and special education program options.

Resource Specialist Program: Resource Program Specialist Program is a special education service that provides instruction and services to those students whose needs have been identified in an IEP, and are assigned to regular classroom teachers for the majority of a school day.

Special Day Inclusion Services: Student is educated in the general education classroom. Modifications to the general curriculum are usually required more than 50% of the school day.

Special Day Class in public integrated facility: is a placement setting that provides intensive instruction and services to pupils when the nature or severity of the disability precludes their participation in the regular school program for a majority of a school day.

Special Day Class in public separate facilities: a placement setting in which disabled children and youth receive special education and related services for a majority of the school day in a public separate

Source: California Special Education Management Information System (CASEMIS), User's Manual, 2002-03 Edition. California Department of Education, Special Education Division.